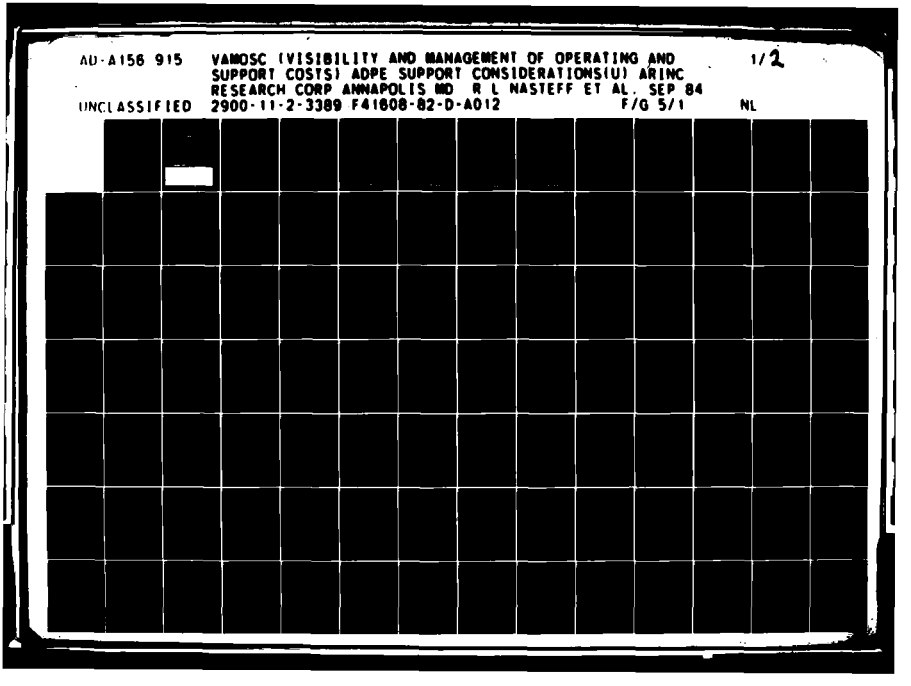
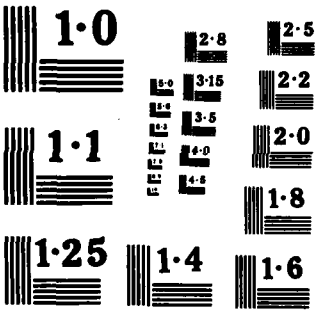
AD-A156 915 VAMOSC (VISIBILITY AND MANAGEMENT OF OPERATING AND SUPPORT COSTS) ADPE SUPPORT CONSIDERATIONS(U) ARINC RESEARCH CORP ANNAPOLIS MD R L NASTEFF ET AL. SEP 84 1/2

UNCLASSIFIED 2900-11-2-3389 F41608-82-D-A012 F/G 5/1 NL




1·0
1·1
1·25
1·4
1·6
1·8
2·0
2·2
2·5
2·8
3·15
3·5
4·0
4·5
5·0

ARINC Research Publication 2900-11-2-3389

AD-A156 915

DTIC FILE COPY

FINAL REPORT

VAMOSC
ADPE SUPPORT CONSIDERATIONS

September 1984

Prepared for
Headquarters Air Force Logistics Command
HQ AFLC/MMIL (VAMOSC)
Wright-Patterson AFB, Ohio
under Contract F41608-82-D-A012-0005

DTIC
ELECTE
JUL 26 1985

This document has been approved for public release and sale; its distribution is unlimited.

ARINC RESEARCH CORPORATION

85 06 20 049

FINAL REPORT

VAMOSC
ADPE SUPPORT CONSIDERATIONS

September 1984

Prepared for

Headquarters Air Force Logistics Command
MML (VAMOSC)
Wright-Patterson AFB, Ohio

under Contract F41608-82-D-A012-0005

by

Roger L. Nasteff
Wallace Miller
Sally Tarquinio

ARINC Research Corporation
a Subsidiary of ARINC Incorporated
2551 Riva Road
Annapolis, Maryland 21401

Publication 2900-11-2-3389

Copyright © 1984
ARINC Research Corporation

This material may be reproduced by or for the U.S. Government pursuant to the copyright license under DAR Clause 7-104.9(a) (May 1981).

Accession For
NTIS GRA&I
DTIC TAB
Unannounced
Justification
By
Distribution/
Availability Codes
Dist | Avail and/or Special
A-1

The above statement can be deleted per Mr. Donald J. Romie, HQ AFLC/MML (VAMOSC)

DTIC COPY INSPECTED

FOREWORD

This final report completes the requirements of Contract Data Requirements List (CDRL) A003, Final Report, specified in Contract F4168-82-D-A012-0005. It summarizes the results of Task 1 activities in the VAMOSC ADPE Support Study and presents the results of Task 2, with discussions of concept and approach.

The report also presents recommendations made as a result of our project Task 1 and Task 2 study activities. These recommendations are intended to provide the HQ AFLC/MML(VAMOSC) Program Office with an independent, comprehensive, unbiased data management planning framework for use in its decision-making/management process.

ABSTRACT

This final report presents the results of the Visibility and Management of Operating and Support Costs (VAMOSC) Automatic Data Processing Equipment (ADPE) Support Study. The project was undertaken at the request of the HQ AFLC/MML(VAMOSC) Program Office and spanned 12 calendar months from October 1983 through September 1984. Most of the work was performed at ARINC Research Corporation headquarters in Annapolis, Maryland, with occasional trips for data gathering and project status briefings. Software system engineering technologies used during this study included face-to-face user requirements survey, requirements analysis, functional analysis, interface analysis, computer facility modeling, and data system sizing.

GLOSSARY OF ABBREVIATIONS AND ACRONYMS

ADPE	Automatic Data Processing Equipment
ALC	Air Logistics Center
BPI	Bits Per Inch
C-E	Communications-Electronics
CDC	Control Data Corporation
CDRL	Contract Data Requirements List
CPU	Central Processing Unit
CSCS	Component Support Cost System
DBMS	Data Base Management System
DIO	Disk Inputs and Outputs
DSARC	Defense System Acquisition Review Council
kb	Kilobytes
MIPS	Million Instructions Per Second
Mb	Megabytes
NOS	Network Operating System
O&S	Operating and Support
PLEX	Programming Language Extension
PM	Periodic Maintenance
POM	Program Objective Memorandum
VAMOH	VAMOSC Preprocessor
VAMOSC	Visibility and Management of Operating and Support Costs
WSSC	Weapon Systems Support Cost

CONTENTS

CONTENTS (continued)

LIST OF ILLUSTRATIONS

CONTENTS (continued)

LIST OF TABLES

CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND

The Air Force VAMOSC (Visibility and Management of Operating and Support Costs) Program Office is responsible for the development and maintenance of the Air Force VAMOSC data system. The VAMOSC system currently consists of three data subsystems and a preprocessor subsystem that collect and report the operating and support (O&S) costs of USAF aircraft at the mission-design-series level, ground communications-electronics systems at type-model-series level, and components of aircraft systems at the work-unit-code level. These subsystems have been developed to meet Air Force and Department of Defense requirements. Specifically, the VAMOSC program is designed to meet the requirements of the operating and support portion of life-cycle costing (Department of Defense Directive 5000.39, Acquisition and Management of Integrated Logistic Support for Systems and Equipment; and AFR 800-8, Integrated Logistics Support Program).

The VAMOSC data are used by the Air Force to support planning and budgetary input to the Defense System Acquisition Review Council (DSARC) process for acquisition of new weapon systems and to aid the Program Objective Memorandum (POM) process in identifying existing systems for possible modification, as well as other cost analysis uses. VAMOSC data provide the managers of Air Force weapons systems the visibility of the resources required to support those systems. The data also provide a means by which the trends of Air Force weapon system O&S costs can be developed.

1.2 SCOPE

The study of VAMOSC automatic data processing equipment (ADPE) alternatives included two tasks: (1) identify data requirements, and (2) identify and evaluate alternative technology approaches for processing and storing VAMOSC-produced data.

In conjunction with the two tasks, Contract F41608-82D-A012-0005 specified the following Contract Data Requirements List (CDRL) items:

- A001 - delivery of monthly status letter reports
- A002 - Interim Report - Task 1 Status Brief delivery

[redacted] PAGES BLANK-NOT FILMED

- A002 - Interim Report - Task 1 Letter Report delivery

- A002 - Interim Report - Task 2 Status Brief delivery

- A003 - Final Report - delivery of this report

1.3 INFORMATION AND DATA SOURCES

The following documents and publications provide further information concerning the initiation, research, and preparation of this report:

Project Authorization

Engineering Services Contract Engineering Task (F41608-82-D-A012-0005).

Previous Documents

VAMOSC ADPE Support Considerations - Task 1 Status Brief, ARINC Research Corporation, February 1984.

VAMOSC ADPE Support Considerations - Task 1 Letter Report, ARINC Research Publication 2900-11-1-3221, March 1984.

VAMOSC ADPE Support Considerations - Task 2 Status Brief, ARINC Research Corporation, May 1984.

Related Documents

Functional Description: Weapon System Support Costs (WSSC) and Communications-Electronics (C-E) for the Visibility and Management of Operating and Support Costs (VAMOSC), USAF FD-K-14010C, 17 December 1982.

Subsystem Specification of the Preprocessor (VAMOH) DSD D160-VA for the Visibility and Management of Operating and Support Costs System (VAMOSC), USAF SS-K-110583, 20 June 1983.

System/Subsystem Specification of the Weapon System Support Costs System (WSSC), DSD D160.WS for the Visibility and Management of Operating and Support Costs System (VAMOSC), USAF SS-K-11058B, 20 June 1983.

System Specification: Ground Communications-Electronics (C-E) Equipment Subsystem (DSD: 160A) for the Visibility and Management of Operating and Support Costs System (VAMOSC), USAF SS-K-11058D, 5 December 1983.

System/Subsystem Specification: Component Support Cost System (CSCS) for the Visibility and Management of Operating and Support Costs System (VAMOSC), USAF SS-K-14010B, 1 June 1983.

Visibility and Management of Operating and Support Costs Program - Policy and Procedures, User's Guide Series, AF Regulation 400-31, Volume I, 30 September 1982.

Visibility and Management of Operating and Support Costs Program - Weapon System Support Costs (WSSC), User's Guide Series, AF Regulation 400-31, Volume II, 24 August 1982.

Visibility and Management of Operating and Support Costs Program - Ground Communications-Electronics (C-E), User's Guide Series, AF Regulation 400-31,
Volume III, 12 August 1982.

Visibility and Management of Operating and Support Costs Program - Component Support Cost System (CSCS), User's Guide Series, AF Regulation 400-31, Volume IV, 6 August 1982.

Visibility and Management of Operating and Support Costs (VAMOSC II), Final Report, Information Spectrum, Inc., 2 January 1980.

Visibility and Management of Operating and Support Costs - System II (VAMOSC II) - Feasibility Report, Information Spectrum, Inc., 1 November 1978.

Visibility and Management of Operating and Support Costs - VAMOSC II - User Requirements Report, Information Spectrum, Inc., 2 July 1979.

Visibility and Management of Operating and Support Costs - System II - Economic Analysis, Information Spectrum, Inc., 1 April 1980.

1.4 REPORT ORGANIZATION

Chapter Two of this report presents the results of Task 1 in summary form and describes the motivation for a study of ADPE alternatives. Chapter Three describes the current ADPE environment and focuses on the hardware and software and the expansion capability. Chapter Four describes the technical approach and results of Task 2 - The ADPE Alternatives Study. Chapter Five addresses the ADPE alternatives selected as a result of the study and provides recommendations. A five-year data system planning framework is included in Chapter Five as a guideline for orderly VAMOSC growth. The Appendix presents the data base used during this study.

CHAPTER FOUR

ADPE ALTERNATIVE STUDY - TASK 2

Two components are necessary for the successful operation of any data system: the archive (or storage) component and the computer processing component. Up to this point the discussion has centered on the current VAMOSC data archive requirement, with some estimated archive projections for five and ten years, and the current ADPE host environment within which VAMOSC operates. This chapter examines the current VAMOSC processing load. The findings are used to develop certain processing load selection criteria that must be satisfied by the ADPE alternatives.

4.1 APPROACH

To determine the current VAMOSC processing load, a functional processing load analysis was performed. A functional processing load can be described as a workload that results from the execution of a computer program or routine that causes data to pass back and forth between the CPU memory and auxiliary storage facility (e.g., disk storage facility). This data transfer, which can be expressed in terms of physical disk inputs and outputs (DIOs), is indicative of the processing load (or DIO load) placed on the host ADPE storage facility. Once the current DIO load has been determined from the functional processing analysis, it can be used in conjunction with the facility utilization equation to define the disk storage facility requirements that need to be satisfied by an ADPE alternative in order to provide for the successful operation of the computer processing component.

4.1.1 Analysis of Functional Processing Load

To determine the total yearly processing load for the VAMOSC data system, the following steps were taken:

1. Identify major subsystems (VAMOH, WSSC, C-E, CSCS).

2. Break each subsystem into its functions.

3. Trace each function through its respective subsystem functional description document to determine the computer programs and associated input/output files required to support the function.

extension of a mainframe data base management system. IDIS enables each user to specify and summon mainframe data to and from a 16-bit microcomputer-based system for local processing. This product is geared toward the professionals who have limited data base technical sophistication but who know how to manipulate their own information.

Currently, there are no data base applications on the CYBER. The ADP processing environment will support any of the three data base systems that were identified as suitable for the CYBER 170/730. The Data Processing Organization has a licensing agreement with Intel Corporation for System 2000 for the test machine only.

3.4 ENVIRONMENT RELIABILITY AND STABILITY

The maturity of the VAMOSC system is partially dependent upon the reliability and stability of the data processing environment in which it resides. Changes in computer systems, hardware, operating software, and application code have the potential for introducing errors (e.g., system and data problems), which reduces the credibility of VAMOSC.

Peripheral expansion and replacement has occurred with little or no effect on application system processing. In fact, most changes are made with no communication to the end user. The most notable change that occurred was the replacement of the computer. An older CDC was replaced by the 170/730 over a 48-hour period with no downtime. The application systems (the programs, the utilities, and the data files) were completely transportable. The data processing function could migrate onto a larger CYBER with no changes to application code. For example, a dual processor could be installed, and there would be no impact on the system. More important, the transition from a Model 170 main processor to a Model 176 is accomplished with no impact. The Model 176 processor has a unique operating system but recognizes and executes 170 applications in a native environment. Control Data Corporation maintains that application systems are completely transportable among the CYBER family of computers. The Data Processing Group is in an ideal position to expand the capacity of the CYBER computers without materially affecting the VAMOSC application system.

The current mass storage configuration can be expanded to accommodate additional Model 885 disk storage subsystems. The increased disk capacity will facilitate faster processing with larger on-line data bases.

The precise number of 885s that can be installed depends on the following:

- Availability of peripheral processors and I/O channels
- Applications systems that require removable disk packs

For each additional Model 885 subsystem installed, two Model 844 disk devices are removed. Currently, each CYBER ADPE configuration contains three 885 disk subsystems. Planning is under way to install addi- tional 885s on each system.

The system architecture of the CYBER ideally supports large on-line data bases, and with the migration toward larger and more efficient disk systems, on-line data bases become more feasible. CDC has developed its own approach to data base management systems and offers the DMS-170 package. CDC's DBMS combines the features recommended in the CODASYL specifications with a data organization based on the relational model. DMS-170 incorporates the CYBER Record Manager, an integral component of the CYBER service operating systems, for performing all accesses to data base files. As a result, conceptual data files can be accessed by DMS-170 application programs, allowing an organization to install a phased or even partial implementation of a data base environment. DMS-170 is a DBMS native to the CYBER. The 170/730 also supports DBMS systems offered by other vendors: TOTAL by CINCOM Systems Incorporated, and System 2000 by Intel Corporation.

Control Data Corporation offers CINCOM's TOTAL data base management system as an optional software package. TOTAL is designed to operate on a variety of mainframe and minicomputer systems in on-line or archival and other data structures. New applications and files can be defined for existing files without affecting previously implemented applications and programs. TOTAL can operate in any of three modes: the single-task mode, a central multitasking mode, and a special on-line multitask mode for users who require TOTAL to reside directly in the on-line partition. TOTAL supports vendor-supplied disk access methods without any modifications.

Intel Corporation's System 2000 is one of the most versatile data base management systems available. It is supported by a large variety of computer systems and operating environments. System 2000 is a full-featured data base management system that supports on-line and batch processing. It supports a Programming Language Extension (PLEX) feature that allows an application programmer to access System 2000 data bases. System 2000 contains features that can be used from remote or local terminals in either a batch or interactive environment. The data base can be loaded incrementally or all at once, in special streams or in existing formats, from a batch input device or an interactive terminal. System 2000 supports IDIS, a microprocessor-based product specifically designed as an

packs, and each computer system supports 17 disk drives of this type. The Model 885 disk storage unit is a high-capacity mass storage system containing two independent drives with nonremovable disks. Each drive stores 692 million characters of data, for a total capacity of 1.38 billion characters of on-line storage. Currently there are three 885 disk units per system.

Each CYBER ADPE configuration supports additional peripheral systems: card reader and punch and high-speed line printers. Off-line high-speed printing and reproduction and microfiche creation are available in support of user applications.

The CYBER 170/730s support remote job entry and asynchronous terminal communications. The VAMOSC Program Office is not currently using any of the communication support offered by data processing.

3.2 CURRENT SOFTWARE ENVIRONMENT

The CYBER 170/730 uses the Network Operating System (NOS), a collection of interrelated programs that support large-capacity interactive processing, local and remote batch processing, and transaction processing. NOS is able to support a large number of multiprocessing and multiprogramming operations. A full complement of utilities is supported, such as sort/merge, library maintenance, line editors, and file transfer programs. The CYBER supports high-level application languages. The VAMOSC subsystems are written in the COBOL high-level language. Currently, the VAMOSC subsystems are being converted from COBOL 4 to COBOL 5.

System software support (maintenance of the NOS operating system) is provided in part by a resident CDC software engineer.

3.3 EXPANSION CAPABILITY

VAMOSC is supported by an ADP environment that has been expanded and can be further expanded to satisfy additional processing requirements. Data processing expansion plans ensure that the hardware environment and software enhancements are in place to support the growing user requirements. The following paragraphs explore the hardware (e.g., main processors and disk systems) and software expansion capabilities that would benefit VAMOSC.

The main memory configuration of 2.62 million characters is the maximum capacity for a single-processor CYBER 170/730. The next and final expansion upgrade is to add a second processor to the system. A dual-processor system will utilize the existing peripheral processor configuration and will not require extensive changes to NOS. This system provides for double the computing power without incurring additional hardware or software overhead. For example, no additional disk space is required and no system software changes are required for the processing queues. Dual processors have been installed at each Air Logistics Center (ALC) with the exception of Warner Robins. Preliminary discussions have begun within the data processing group regarding the expansion to a dual processor at WPAFB.

CHAPTER THREE

CURRENT VAMOSC ADPE ENVIRONMENT

The VAMOSC Program Office is a user of the ADP support service offered by the Air Force Data Processing Support organization. This organization provides a full complement of data processing support services, including systems analysis, programming, systems programming, computer operations, and production. The program office has been utilizing these services since the inception of VAMOSC.

3.1 CURRENT HARDWARE

Currently the VAMOSC preprocessor (VAMOH) and the three data subsystems (WSSC, C-E, CSCS) operate in a time-shared batch environment that is hosted on a Control Data Corporation (CDC) CYBER 170/730 mainframe computer. The CYBER systems are designed for interactive, remote batch, and transaction processing as well as data base management applications. The CYBER 170 series computers are based on the concept of one or two central processors and a central memory serviced by independent peripheral processors. The peripheral processors facilitate rapid data transfer between the central processor and peripheral devices (e.g., tape drives, disk drives).

The data processing function is supported by two CYBER 170/730s that are identically configured. One machine is designated for production processing, and the other supports testing activities. The test machine, because its configuration is identical to that of the production machine, serves as a back-up computer for production processing. The test machine is used for scheduled production processing during nonprime time.

Each CYBER 170/730 is configured as a single processor with main memory capacity of 2.62 million characters. The magnetic tape subsystem consists of one 7-track and seven 9-track tape drives. The 7-track tape drives are being phased out and are being replaced with more modern and increased-capacity 9-track units. VAMOSC uses magnetic tape for input/output and for off-line storage of master files and archival files.

The mass storage (disk) subsystem provides rapid access to large quantities of data resident on-line. The production and test machines each use two different disk subsystems. The Model 844 mass storage disk system stores 118 million characters per disk. These are removable disk

[illegible] FILMED

capability (via computer terminal) so that the cost analyst community can manipulate selected portions of the data base to create output data products in formats of their own choosing.

The subsequent chapters of this report examine alternative approaches to satisfying the growing data archive requirement and the continuing VAMOSC data processing requirement so that a planning framework can be established within which orderly VAMOSC data system growth can be managed.

TABLE 2-2

VAMOSC ON-LINE HISTORIC ARCHIVE ESTIMATES

Systems and Tables	Current Size* (FY 81 and FY 82)	Growth Factor (from Task 1 Findings)	Five-Year Estimated Size (Three Years' Growth)	Ten-Year Estimated Size (Eight Year's Growth)
WSSC	3.0 Mbytes	1.5 Mbytes/ year	7.5 Mbytes	15 Mbytes
C-E	11.0 Mbytes	5.5 Mbytes/ year	27.5 Mbytes	55 Mbytes
CSCS	210.0 Mbytes	105 Mbytes/ year	525 Mbytes	1050 Mbytes
Common Tables and Factors	445.0 Mbytes	Size of tables and factors expected to remain fairly static	445.0 Mbytes	445.0 Mbytes
Total	669 Mbytes		1005 Mbytes	1565 Mbytes

*Sizes are approximate.

2.4 MOTIVATION FOR THE STUDY OF ADPE ALTERNATIVES

Currently the VAMOSC preprocessor (VAMOS) and the three data subsystems (WSSC, C-E, CSCS) operate in a time-shared batch environment that is hosted on a Control Data Corporation (CDC) CYBER 170/730 computer. The VAMOSC Program Office has recognized the need to plan the transition of its application from a time-shared batch ADPE environment to an ADPE environment that supports the VAMOSC application data requirements into the 1990s and beyond. The technology selected to accomplish this task must be able to handle the processing and archival demands of an historical data base application with the requirement for storing up to 10 years' worth of selected data in an on-line data base management environment. In addition, the VAMOSC Program Office foresees the need to provide on-line user access

2.3 VAMOSC FUTURE DATA STORAGE REQUIREMENTS

The magnetic tape information described in the preceding subsections was gathered to help quantify the magnitude of an integrated on-line data base that could support all of the VAMOSC subsystems' data storage requirements. The following estimates are baselines; and since they were derived from magnetic tape storage files (where zero or blank fill is common to "pad out" a tape record and causes extra characters to be written during output), we expect them to be at the upper boundary of data-storage-size estimates. To arrive at a quantifiable data base size estimate, we applied certain user survey findings in conjunction with our finding on current VAMOSC data base size and made some assumptions:

- Standard 2,400-foot reels of magnetic tape were used.
- Output was written to magnetic tape at 6,250 bits per inch (BPI).
- A growth factor could be calculated on the basis of available magnetic tape file data (sizes, in bytes, were rounded up to the nearest million where applicable).
- Three-year and eight-year multipliers were used in conjunction with the results of the one-year-growth calculation.
- One copy of tables and cost factors will service the three VAMOSC subsystems (we chose to combine C-E and CSCS tables for this size, since CSCS was the largest and C-E was the most unique).
- One data byte equals one data character.

Table 2-2 illustrates VAMOSC's future data storage requirement based on our analysis of the current system. As shown, more that 1 billion bytes of data will be required to maintain the five-year on-line data base. A five-year history was chosen because it matched the most common user response for the minimum number of years required to provide a useful on-line historic archive (see Table 2-1). As the VAMOSC data system matures, it is expected that the data base archive will increase to a size necessary to support a ten-year on-line historic archive. On the basis of the calculated growth trends developed in Task 1 and illustrated in Table 2-2, our current estimate of the size of a ten-year on-line historic data base archive is 1.6 billion bytes. Once again, a ten-year archive was chosen because it matched the most common user response for the maximum number of years required to provide a useful on-line historic archive (see Table 2-1). Thus the study of the current VAMOSC data archive, with five-year and ten-year projections, placed a growth support requirement on the current VAMOSC data system and established certain selection criteria that must be satisfied by the ADPE alternatives. These criteria are delineated in Chapter Four.

2.2 MEASUREMENT OF THE CURRENT VAMOSC DATA SYSTEM

The VAMOSC application data system is composed of a preprocessor subsystem and three data subsystems (VAMOH, WSSC, C-E, CSCS) each of which is a multistep, multirun job within a time-shared batch environment hosted on a CDC CYBER 170/730 computer. Processing is accomplished in the CYBER computer central processing unit (CPU) with the assistance of process working files on disk storage devices and magnetic tape devices. Output is written to magnetic tape devices for data base storage or off-line printing. Data base tapes are written in "dumptape" format, which is machine-readable and permits multiple data files of different record types to be sequenced on the same magnetic tape. The tapes written for off-line printing ("printapes") differ from dumptapes in that they contain records that are in printable report formats. The purpose of presenting the information on dumptapes and printapes is twofold: (1) tape storage is the current VAMOSC data base storage medium, and (2) the number of reels required for data base dumptape storage and output product printape storage provides a good representation of the relative magnitude of an application's data storage requirement. The following paragraphs summarize the VAMOSC data system measurements in reels of magnetic tape.

2.2.1 Current VAMOH Subsystem Data Requirement

The VAMOH subsystem is the VAMOSC data system preprocessor and as such has no output data requirement. The data files handled by VAMOH have been accounted for in the analysis of the other subsystems.

2.2.2 Current WSSC Subsystem Data Requirement

The WSSC subsystem maintains three files in dumptape format. These are concatenated files and are updated annually. Three magnetic tape reels are required to support the annual WSSC dumptape data storage archive.

2.2.3 Current C-E Subsystem Data Requirement

The C-E subsystem maintains three files in dumptape format. These are concatenated files and are updated annually. Four magnetic tape reels are required to support the annual C-E dumptape data storage archive.

2.2.4 Current CSCS Subsystem Data Requirement

The CSCS subsystem maintains 16 files in dumptape format. Thirteen of these tape files have one record type per tape; the other three are concatenated files. All 16 tape files are updated monthly or quarterly. Twenty magnetic tape reels are required to support the annual CSCS dumptape data storage archive. Printape output files were not mentioned in the summaries of the WSSC and C-E subsystem, because their size in numbers of tape reels was not significant. However, for the CSCS subsystem, 25 magnetic tape reels are required to produce the quarterly fiche output product.

TABLE 2-1

SUMMARY OF SURVEY FINDINGS

System Characteristic	Requirement	Comments
Historical Data Storage	- Minimums range from 1 year to 10 years - Maximums range from 5 years to weapon system lifetime.	Most common response - 5 years - 10 years
Data Age	- Fiscal-year-end data are acceptable.	
Frequency of Data Use	- First-time requests for new data average 2 to 3 per month. - Repeated access of on-hand data averages 1 per week.	- Usage could be larger as VAMOSC matures. - Usage could be larger if on-line data base query services were available.
Response Time	- Current: 2 weeks to 3 months - Future: 3 days to 1 month	Most common response - 1 month - 1 week
Output Product	- Magnetic tape data files are desired. - There is also interest in paper and fiche products.	- Floppy disks may be a future requirement. - On-line data base query services may be a future requirement.

19. What data elements are used? Do you do much processing of the data, or can you plug them directly into your algorithms? _____

20. Do you recommend adding other data elements? _____

21. What is your overall impression of VAMOSC? _____

FIGURE 2-1 (continued)

10. Is having current data important? _____

11. What was the response time for your initial requests? _____
    Subsequent requests? _____

12. What is the maximum response time allowed? _____

13. What would be the effect on usage if the system were on-line?
    _____

14. How frequently do you request data?_____
    _____
    Are they recurring requests, or do you require special reports for different aircraft/components, depending on the type of study required?_____

15. What do the data look like?
    - Physical characteristics: magnetic tape, fiche, paper reports
    - Memory required: number of bytes, number of pages of paper
    _____

16. Are data entered into the model manually or read in automatically?
    _____

17. What machine is your analysis performed on?_____
    _____

18. What models and techniques do you use to analyze data? _____
    _____
    _____

FIGURE 2-1 (continued)

VAMOSC USER SURVEY

Date:_____

1. Name: _____
   Organization: _____

2. Job Description: _____
   _____
   _____

3. What exposure have you had to VAMOSC? _____
   _____

4. What data are used to perform the analysis? Which reports, for what type of data? _____
   _____

5. Are they standard reports or special requests? _____
   _____

6. If VAMOSC is used, do you supplement it with other data? What data?
   _____

7. If VAMOSC is not used, are you aware of data available from VAMOSC?
   _____

8. Do you use the WUC/NSN cross-reference? How can this be improved?
   _____

9. What is the typical range of data required? (3 years, 5 years, 10 years, more than 10 years) _____

FIGURE 2-1

SURVEY QUESTIONS

CHAPTER TWO

TASK 1 SUMMARY

This chapter summarizes the Task 1 findings concerning VAMOSC data requirements. The objective of Task 1 was to identify current data requirements and those to be imposed on the VAMOSC data system into the 1990s and beyond. We employed two techniques to obtain the needed information: (1) a survey of the current and potential members of the VAMOSC user community, and (2) measurement of the current VAMOSC application data systems. For the complete Task 1 presentation, see Task 1 Letter Report - VAMOSC ADPE Support Considerations, ARINC Research Publication 2900-11-1-3221, March 1984.

2.1 USER SURVEY RESULTS

The survey was conducted at the respective user sites; it consisted of face-to-face meetings between ARINC Research project personnel and members of the Air Force Cost Analyst community selected by the VAMOSC Program Office. A prepared list of questions (see Figure 2-1) was used at these meetings.

Notwithstanding the fact that the Air Force cost analyst users were for the most part unfamiliar with the VAMOSC system, they were able to provide valuable insights concerning the data needed to fulfill their duties. We translated those requirements into VAMOSC requirements. In general, our questions examined:

- Historical range of data required
- Age of the data used
- Frequency of data use
- Response time for data requests
- Output product media formats

The survey findings are summarized in Table 2-1. To understand how these user requirements would affect the magnitude and growth of the VAMOSC data requirement, we first needed to examine and measure the size of the current VAMOSC application data system.

4. Order the input and output files with their controlling program.

5. Examine the input and output file contents and determine total number of bytes associated with each program.

6. Examine the functional description and computer program description to determine function/program re-use factor.

7. Multiply the function/program re-use factor from Step 6 by the total bytes from Step 5 to produce an annualized byte total per program.

8. Aggregate byte totals per program to the function level.

9. Aggregate byte totals per function to the subsystem level.

10. Aggregate byte totals per subsystem to the system level.

A functional analysis form was generated to help organize the gathered function/program information. Figure 4-1 shows a completed example that was taken from the analysis collection belonging to the WSSC subsystem. Analysis forms were prepared for each of the major programs associated with a function, and a data base was constructed to order the functions/programs of each subsystem. The Appendix contains the resultant functional analysis data base for each VAMOSC subsystem.

4.1.2 Facility Utilization

For the purpose of illustration, a single-server queuing situation* is shown as a central processing unit (CPU) requesting the service of its associated disk I/O storage facility (see Figure 4-2). Figure 4-2 represents a simplified example of a CPU environment that has a single-service I/O facility. Stated another way, the CPU is serviced by an I/O facility that consists of a single-disk I/O device. Since the I/O facility may contain any number of other hardware I/O devices, we will assume that it contains only disk I/O devices.

For the facility utilization of a single-server queuing situation, Martin** makes the following assumptions:

- The arrival times of the I/O requests from the CPU to the I/O request queue follow a Poisson distribution

- I/O requests are served on a first-in, first-out basis

- The service times for the disk I/O facility follow an exponential distribution

*James Martin, DESIGN OF REAL-TIME COMPUTER SYSTEMS, ©1967, pp. 382, 396. Adapted by permission of Prentice-Hall, Inc., Englewood Cliffs, N.J.
**Op. cit., pp. 374-382.

SUBSYSTEM: WSSC

Function ID	Description
1.0	Process Flying Operations Data

PROGID: PIPNO FREQ. OF USE: ANNUALLY

INPUT FILES	ID	MEDIA	RECVOL	RECSIZ
PIMFEAD	C4	TAPE	200	40
PIMFEAE	C9	TAPE	12000	40
PIMFEAB	C7	TAPE	12000	40
PIMFEAN	C33	TAPE	500	40

OUTPUT FILES	ID	MEDIA	RECVOL	RECSIZ
PIMNOCO	C13	DISK	2000	60
PIMNOBO	C14	DISK	2000	60
PIMNOAO	C34	DISK	1000	50

FIGURE 4-1

FUNCTIONAL ANALYSIS FORM

and gives the facility utilization equation as

$$U = (n)(s)$$

where the terms (n) and (s) are representative of the variables shown in Figure 4-2.

Facility utilization should fall within the interval of 0 to 1. A facility utilization factor of 1 would indicate 100 percent utilization, or facility saturation. Facility saturation is an undesirable condition, and estimation factors that cause the facility utilization equation to approach 1 should be avoided. For a disk I/O facility, a recommended

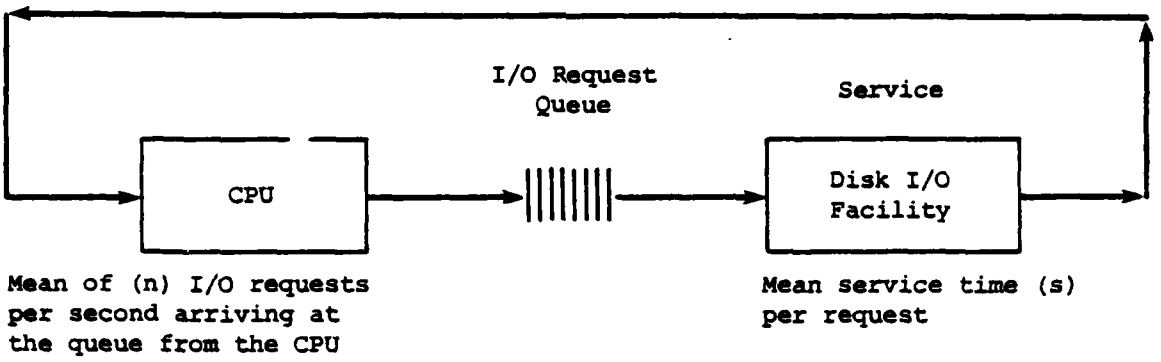


FIGURE 4-2

SINGLE-SERVER QUEUING

average utilization factor range would be from 50 percent to 70 percent. At an average 50 percent utilization, the disk I/O facility provides the CPU with good throughput capability with little I/O request-queue build-up. At an average 70 percent utilization, the throughput is not as good and the I/O request queue will build up, but the probability of facility saturation during a peak load period is still acceptable (given adequate I/O request-queue size). Although the facility utilization range of 50 percent to 70 percent is the author's unsubstantiated recommendation, it is not made haphazardly, since Martin* cites various examples throughout his text that lend credibility to a range of 50 percent to 70 percent for a successful disk I/O service facility.

For some computer applications a single-server disk I/O facility (a single-disk storage computer configuration) is adequate, but for the larger applications a multiserver disk I/O facility is required. Expanding Figure 4-2 by adding more disk I/O facilities, we see that I/O requests from the queue can be served by any of the available disk I/O facilities (see Figure 4-3). This assumes a uniform distribution of requests across disk I/O facilities. For multiserver queues, Martin** makes another assumption:

- All the disk I/O facilities have identical service time distributions

and shows that, given (M) identical servers, (n/M) requests go to each server and the facility utilization of each server is

$$U = [(n)(s)]/M$$

Thus the I/O request load is distributed equally over the available disk I/O facilities. We now have the equations for modeling a disk I/O configuration if we know the processing load (I/O requests per second) and the disk I/O facility service time (disk I/Os accomplished per second).

*Op. cit., pp. 345, 378, 384, and 385.
**Op. cit., pp. 396-399.

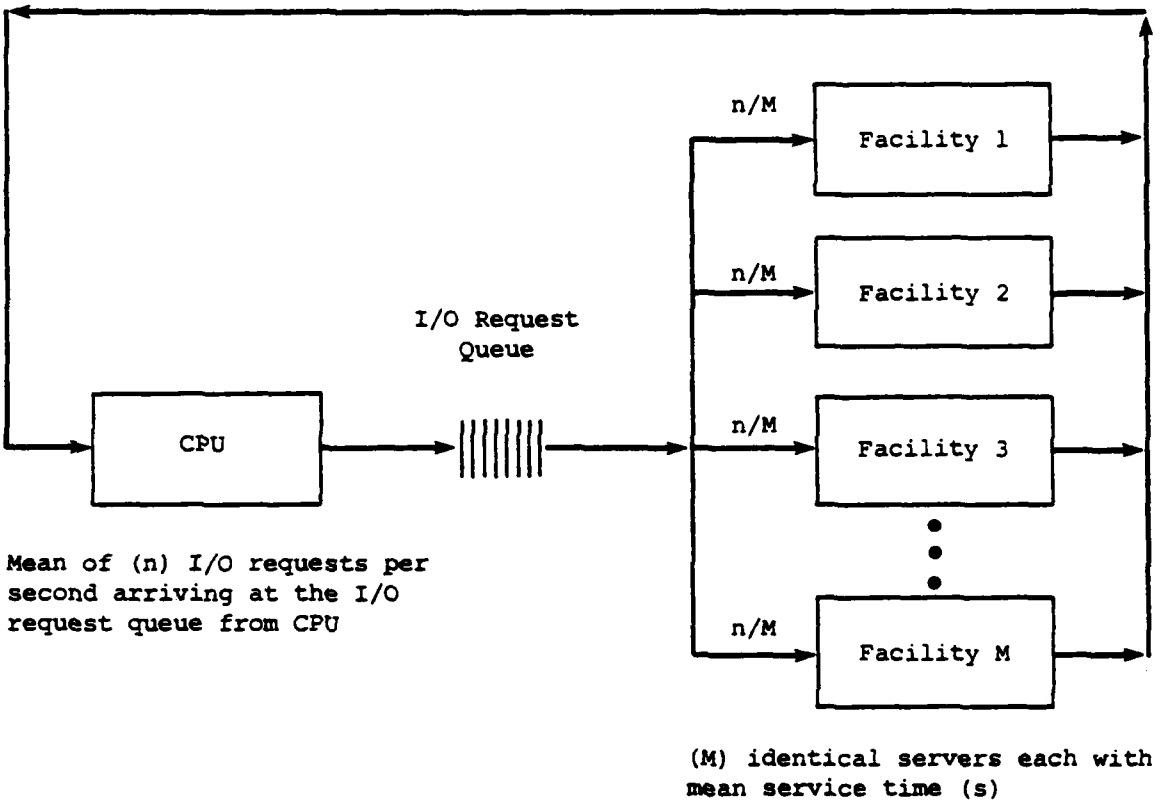


FIGURE 4-3

MULTISERVER QUEUING

4.2 RESULTS

The following subsections describe the results of the processing load analysis and facility utilization equation modeling and develop a list of ADPE alternatives based on the selection criteria (requirements) developed from the findings.

4.2.1 Results of Functional Processing Load Analysis

The numbers presented in Table 4-1 were derived from the functional processing load analysis data base, which is presented in the Appendix. The "Monthly" column represents the annualized monthly processing load for each subsystem, the "Quarterly" column represents the annualized quarterly load for each subsystem, and the "Annual" column represents that portion of the processing load that occurs once a year. The "Total Annually" column is the sum for each subsystem of the annualized entries in each column.

TABLE 4-1

VAMOSC PROCESSING LOAD (BYTES)

Subsystem	Monthly	Quarterly	Annually	Total Annually
VAMOH	258,854,160	738,676,080	144,133,249	1,141,663,489
WSSC			183,693,940	183,693,940
C-E	169,728,000	12,000,000	427,514,966	609,242,966
CSCS	30,624,254,280	9,951,962,920	1,042,928,779	41,619,145,970
			Total	43,553,746,365*

*Or approximately 44 billion bytes

Table 4-1 shows that the VAMOSC annual processing load is approximately 44 billion bytes. The VAMOSC data system concerns itself with a list of selected active weapon systems. When one weapon system becomes inactive (representing a decrease in processing load), a new weapon system is added to the active list (representing an increase in processing load), so that the number of weapon systems on the actively tracked list remains constant. We expect the processing load increases to cancel the processing load decreases, providing a fairly stable total processing load over time. Therefore, we have no growth factor associated with the VAMOSC system processing load.

We know the VAMOSC processing load to be 44 billion bytes per year, but we would like to have this processing requirement in the more useful form of bytes per second. To obtain bytes per second, we need to make some assumptions regarding the host computer's work week/work month. Let us assume the following:

1. VAMOSC is the only system running in the central processing unit (CPU); hence, the CPU will never cause the disk I/O facility to wait for an I/O process request.

2. Twenty-four hours of computer processing time per month are lost due to periodic maintenance (PM).

3. Ten days of computer processing time per year are lost due to holidays (this applies only to single-work-shift operations).

4. There are 24 hours per work day with a 7-day work week - this implies

24 hrs/day x 365 days	=	8760 hrs
24 hrs/mon x 12 mon (from assumption 2)	=	-288 hrs
		8472 hrs

5. There are 16 hours per work day with a 7-day work week - this implies

16 hrs/day x 365 days	=	5840 hrs
24 hrs/mon x 12 mon (from assumption 2)	=	-288 hrs
		5552 hrs

6. There are 8 hours per work day with a 5-day work week - this implies

8 hrs/day x 260 days	=	2080 hrs
24 hrs/mon x 12 mon (from assumption 2)	=	-288 hrs
10 days x 8 hrs/day (from assumption 3)	=	- 80 hrs
		1712 hrs

Constructing Table 4-2 on the basis of the results of our assumptions, we see that there are a number of ways to process 44 billion bytes of data per year and we can see that for each set of assumptions a different facility load requirement is placed on the disk storage facility. With the information from Table 4-2 and the ability to create any further work-environment scenarios that might be necessary, we next apply the facility utilization equation to determine the size of the disk configuration required to handle the respective loads.

TABLE 4-2

VAMOSC DISK FACILITY LOAD REQUIREMENTS

Processing Load	5 days/wk 8 hrs/day	7 days/wk 16 hrs/day	7 days/wk 24 hrs/day
Bytes per day	206 Mb	127 Mb	125 Mb
Bytes per hr	25.7 Mb	7.9 Mb	5.2 Mb
Bytes per sec	7139 b	2201 b	1444 b

To convert the bytes-per-second results of Table 4-2 into DIOs per second, we need to apply a size factor to the disk input/output operation. Since disk input/output record sizes differ from vendor to vendor and application to application, we will take a representative range of record sizes from 128 bytes per record to 4096 bytes per record, to demonstrate the effect on the processing load requirement. A sample calculation to determine the DIOs-per-second requirement is presented below, and Table 4-3 shows the total range of results.

TABLE 4-3

VAMOSC DIO SUPPORT REQUIREMENTS
(DIOs PER SECOND)

Bytes per Second*	Record Sizes in Bytes				
	128	256	512	1024	4096
7139	55.8	27.9	13.9	7.0	1.7
2201	17.2	8.6	4.3	2.2	0.5
1444	11.3	5.6	2.8	1.4	0.4

*This column of values is taken from Table 4-2.

From Table 4-2, take the first "bytes per second" entry (7139 bytes). Let the disk I/O record size be 128 bytes; then

$$\frac{7139 \text{ bytes/second}}{128 \text{ bytes/DIO}} = 55.8 \text{ DIO/second}$$

This result indicates that given a single-shift 5-days-per-week computer operation schedule and a 128-byte disk record size, the disk I/O configuration will have to process 55.8 DIOs/second to satisfy the VAMOSC processing requirement. Similar requirement statements can be made for the rest of the entries in Table 4-3.

Table 4-3 also illustrates that as the disk input/output record size is increased, the DIO load requirement is decreased. The entries in the above table represent values for the variable (n) in the facility utilization equation.

4.2.2 Results of Facility Utilization Equation

To estimate the number of disk storage facilities required to service the VAMOSC DIO load (or to determine the percentage utilization of the current system), the average DIO service time for a disk storage facility must be known. A disk I/O typically requires multiple hardware operations to perform. The four operations listed below are patterned after Martin's* disk access scenario:

1. Position for disk directory read (seek)

2. Read disk directory (disk record read)

3. Position for target read/write (seek)

4. Perform target read/write (disk record read/write)

Each of these steps requires a certain amount of time. Since DIO service times are hardware-dependent, we need to choose a disk drive unit to illustrate the method of calculating a DIO service time. Using the CDC Model 844-21 disk drive unit, which is part of the current VAMOSC CYBER ADPE environment, we see that

Seek time	(min)	= 10 msec*
Seek time	(max)	= 55 msec*
Rotational delay	(min)	= 0 msec
Rotational delay	(max)	= 17 msec**
Read/write		= 10 msec
Rotational delay		= 17 msec
	(min)	37 msec
	(max)	99 msec
	(avg)	68 msec (seek) + (read/write) + (rotational delay)

*These numbers were obtained from the December 1983 edition of Datapro 70.

**Rotational delay was calculated on the basis of a disk rotational speed of 3600 rpm.

To perform a DIO, the execution of steps 1 and 2 will require 68 msec, and the execution of steps 3 and 4 will require 68 msec. Hence, a DIO will require an average of 136 msec to complete. This computed value represents the variable (s) in the facility utilization equation.

*Op. cit., p. 440.

Given U = (n)(s) the facility utilization equation for a single-server situation
Let (n) = DIOs/sec (from Table 4-3)
Let (s) = 136 msec (from the above discussion)

Then

$$U = (55.8 \text{ DIOs/sec}) (136 \times 10^{-3} \text{ sec/DIO}) = 7.6$$

This indicates that a single-server disk I/O facility is saturated for the conditions that produced the 55.8 DIOs/sec I/O request requirement. Using the multiserver equation, we estimate that to satisfy the 55.8 DIOs/sec requirement we need 12 CDC Model 844-21 disk units.

From Chapter Three we know that the CYBER computer is operated 24 hours a day, 7 days a week. The bottom row of Table 4-3 contains values for (n) that were calculated on the basis of those operation assumptions. Table 4-4 shows the percent load that VAMOSC processing puts on a single-server disk I/O facility (one CDC Model 844-21 disk drive unit) for each of the five different record sizes.

TABLE 4-4

VAMOSC FACILITY UTILIZATION SINGLE CDC MODEL 844-21 DISK DRIVE UNIT

Record Size	DIO Requirements	Percentage Load
128	11.3	153.7
256	5.6	76.2
512	2.8	38.1
1024	1.4	19.0
4096	0.4	5.4

Also from Chapter Three we know that there are 17 CDC Model 844-21 disk drive units available for use in the CYBER 170/730 I/O configuration. Applying the multiserver facility utilization equation produces Table 4-5. In addition to the 17 Model 844-21 disk drive units in the CYBER I/O configuration, there are 3 CDC Model 885 dual-spindle disk drive

TABLE 4-5

VAMOSC FACILITY UTILIZATION 17 CDC MODEL 844-21 DISK DRIVE UNITS

Record Size	DIO Requirements	Percentage Load
128	11.3	9.1
256	5.6	4.5
512	2.8	2.2
1024	1.4	1.1
4096	0.4	0.3

units, which are faster (by 10 msec/DIO) and supply over 11 times (1300 x 10^6 bytes VS 118 x 10^6 bytes) the storage capacity of the Model 844-21 disk drive unit. Therefore, we can say that the percent load values of Table 4-5 are overstated slightly if we consider the extra Model 885 drives to be simply 3 more Model 844-21 drives, for a total of 20 Model 844-21 drives in the CYBER I/O configuration.

The observation that can be made from the Table 4-5 data is that assuming VAMOSC to be executing stand-alone (no other computer job competition) and given a 24-hours-per-day 7-day work week, the VAMOSC data system processing does not place an unmanageable load on its current CDC CYBER 170/730 computer I/O environment.

4.2.3 Alternative ADPE Vendor Survey

In Sections 4.1.1 and 4.1.2 we developed an I/O facility utilization model that defined hardware processing requirements for VAMOSC. These requirements are based on the stand-alone processing load that VAMOSC places on the CYBER 170/730.

The purpose of this section is not specifically to recommend a particular vendor but to describe a generic hardware and software configuration that could accommodate VAMOSC processing in a dedicated environment. Our findings indicate that the system must be a mainframe computer with the following characteristics:

- One million characters of main memory

- Two billion characters of mass storage (disk drives)

- Magnetic tape system (7-track and 9-track)

- High-speed line printers

- Telecommunications support

- Application languages

- Data base management system

The generic configuration is based on our analysis of the VAMOSC mass storage data requirements and processing load requirements that are placed on the existing ADPE. The data mass storage requirements as defined in Table 2-2 indicate a requirement for system configuration. Section 4.2.2 provides an estimation of the minimum performance characteristics that must be met by the generic system. Beyond these two definitive requirements, the remainder of the generic system is based on the attributes of the current system. For example, any system must be able to support 7- and 9-track magnetic tape, high-speed line printer, and telecommunications. Moreover, the system must support a native data base management system and COBOL. The VAMOSC application is written in COBOL. The VAMOSC system would currently require 669 million characters of mass storage, if the data are on-line. The five-year on-line and archival requirement is one billion characters of data storage (see Table 2-2). The generic configuration provides for the five-year requirement with one billion characters available for processing.

The current processor, a CDC CYBER 170/730, is positioned in the marketplace to compete with mainframes offered by other manufacturers in the small-to-medium category. The CYBER 170 family of computer processor systems ranges from the small mainframe to the very large mainframe supporting dual processors. Direct competition comes from:

- AMDAHL 470 and 580 series

- Burroughs B6800 and B7800

- Digital Decsystem 10 and Decsystem 20

- IBM 43XX and IBM 308X

- Honeywell DPS 8/70

- NAS AS/7000 and AS/9000

- UNIVAC 1100/70 and 1100/80

Each of these manufacturers offers a system configuration comparable in size, main storage capacity, performance, and cost. Any one of these vendors could configure a system that would support the VAMOSC processing and storage requirements.

The current data file structure suggests that in any near-future hardware procurement, mainframe technology will be required for VAMOSC processing. Functional load analysis (see Section 4.2.1) and facility utilization (see Section 4.2.2) have defined a model for VAMOSC processing requirements. The size of the current master files, expected growth, and anticipated implementation of an on-line archival file require multiple disks. Our analysis has found that disk management technology capable of supporting flat data files and directories that span multiple disks is available only on mainframes. It is possible that as technology advances, minicomputer disk management subsystems will be capable of supporting multiple disk volume directories.

The following paragraphs describe the alternatives which have the capability to satisfy the above generic configuration requirements. No attempt was made to configure each system completely with respect to cables, system consoles, communication lines, printer devices, and terminals.

Alternative 1 is the current CDC CYBER 170/730 configuration, which was described in Chapter Three.

Alternative 2 is the CDC CYBER 170 system configured specifically for the VAMOSC application.* Two Model 885 disk storage units satisfy the on-line data storage requirement. Each 885 has two nonremovable disks with the capacity to store 1.36 billion characters of data. The CYBER configuration has 2.72 billion characters of on-line storage. This alternative system configuration consists of the following:

- CDC CYBER 170/720
- 980,000 characters of main memory
- 405 card reader
- 580 line printer
- 885 mass storage device (3)
- 2.7 billion characters of mass storage
- 679 magnetic tape devices
- Communication support
- NOS operating system
- Application software

The cost of this system configuration is approximately $828,000.

*Information on all of the alternatives was gathered from Datapro 70.

Alternative 3 is an IBM 4341 computer system. The following system configuration will support the VAMOSC requirements with respect to processing speed and mass storage capacity. The IBM 4341 satisfies the on-line storage requirement by using four 3370 disk systems. Each 3370 supports 571 million characters of storage. This system configuration provides for 2.28 billion characters of on-line storage. This alternative system configuration consists of the following:

- IBM 4341 model group 10
- 2 million characters of main memory
- 2520 Card read panel
- 3203 Line printer
- 3370 Mass storage devices (4)
- 2.1 Billion characters of main storage
- 3420 Magnetic tape drive (4)
- 3725 Communication controller
- OS/VS Operating system
- Application languages (e.g., COBOL)

The cost of the system configuration is approximately $516,500.

Alternative 4 is the UNIVAC 1100/70 system. The following system configuration will support the VAMOSC requirements with respect to processing speed and mass storage capacity. Univac's 8434 disk subsystem provides the required on-line storage capacity. Each 8434 has two nonremovable disk packs with a total storage capacity of 486 million characters. The Univac 1100 system configuration has four 8434 disk subsystems. This alternative system configuration consists of the following:

- UNIVAC 1100/71 Model C1
- Main memory 512K words
- 0716 Card reader
- 0770 Line printer
- 8434 Mass storage devices (4)
- 2 Billion characters of mass storage
- Will serve 26 tape drives
- CMS/1100 Communication management system

- 1100 Operating system

- Application languages

The cost of this system configuration is approximately $681,500.

Each of the alternative configurations satisfies the requirements of the "generic" configuration and supports Intel's System 2000. A detailed explanation of each system configuration and its relative merits is beyond the scope of this report.

In addition to the mainframes that we have identified as satisfying the processing requirements, we analyzed available minicomputers. Over the years the minicomputers have evolved from a computer dedicated to performing a given task to a multiprogramming, multitasking computer. The performance capabilities of this family of computers range from slightly more powerful than a micro to slightly less than a large mainframe. The minicomputers we found that satisfy performance and capacity requirements approach the high end of the spectrum. These machines are frequently referred to as "superminis." Typically, the supermini is based on a 32-bit-word architecture and is capable of supporting a CPU memory of more than 1 million bytes.

Each of these superminis offers capacity and performance comparable to that of the small mainframes. The major difference is that a supermini is at the high end of the vendor's minicomputer line. In other words, a supermini has limited expansion capabilities, within its family, beyond increasing peripheral devices to the maximum permitted. There is no easy path for migration to a larger computer (i.e., mainframe).

Further, our analysis of minicomputers failed to identify a system that supports a multidisk data file. The data requirements of VAMOSC mandate that the system be able to access a single data file that spans multiple disk packs. Certain vendors satisfy this requirement by offering a native data base management that provides data access on a single file to span disk packs. In addition to a native data base management system, TOTAL, a commercially available data base system, satisfies the file requirement and runs on many of the most popular super minicomputers.

The following superminis can be configured to satisfy the performance characteristics of the generic computer system:

- Prime Model 9650

- Data General Model Eclipse MV/6000

- Harris Model 700

None of the superminis run Intel's System 2000. With respect to costs, a comparably equipped mini is in the $250,000-to-$350,000 range. This price is exclusive of any software and any data base management system.

FUNC #	F Q	PROGRAM ID	FILE ID	I/O	REC SIZE	RECORD VOLUME	PERIOD TOTAL	ANNUALIZED TOTAL
* FUNCTIONAL DESCRIPTION ---> PROCESS FLYING OPERATIONS DATA								
1.0	A	PIPN0	PIMFEAD	I	40	200	8000	8000
1.0	A	PIPN0	PIMFEAE	I	40	12000	480000	480000
1.0	A	PIPN0	PIMFEAB	I	40	12000	480000	480000
1.0	A	PIPN0	PIMFEAN	I	40	500	20000	20000
1.0	A	PIPN0	PIMN0C0	0	60	2000	120000	120000
1.0	A	PIPN0	PIMN0B0	0	60	2000	120000	120000
1.0	A	PIPN0	PIMN0A0	0	50	1000	50000	50000
** SUBTOTAL **								1278000
* FUNCTIONAL DESCRIPTION ---> PROCESS EXPENDED DOLLARS (ASO) DATA								
2.0	A	PIP00	PIM0AAS	I	60	25000	1500000	1500000
2.0	A	PIP00	PIM0BAS	I	40	2000	80000	80000
2.0	A	PIP00	PIMAEAL	I	10	500	5000	5000
2.0	A	PIP00	PIM00A0	0	140	10000	1400000	1400000
2.0	A	PIP00	PIM00B0	0	670	10000	6700000	6700000
2.0	A	PIP00	PIM00C0	0	210	10000	2100000	2100000
2.0	A	PIP00	PIM00D0	0	210	1000	210000	210000
2.0	A	PIP00	PIM00G0	0	60	2000	120000	120000
** SUBTOTAL **								12115000
* FUNCTIONAL DESCRIPTION ---> SORT FILE PIMEEAB								
2.0.	A	PIS0A	PIMEEAB	I	60	25000	1500000	1500000
2.0.	A	PIS0A	PIM0AAS	0	60	25000	1500000	1500000
** SUBTOTAL **								3000000
* FUNCTIONAL DESCRIPTION ---> SORT FILE PIMFEAE								
2.0.	A	PIS0B	PIMFEAE	I	40	12000	480000	480000
2.0.	A	PIS0B	PIM0BAS	0	40	12000	480000	480000
** SUBTOTAL **								960000

FUNC #	F Q	PROGRAM ID	FILE ID	I/O	REC SIZE	RECORD VOLUME	PERIOD TOTAL	ANNUALIZED TOTAL
* FUNCTIONAL DESCRIPTION ---> MAPFILE REP FOR ANNUAL AR H069 ASO BUILD								
8.2	A	PIPMP	PIMMJMP	I	3	1	3	3
8.2	A	PIPMP	PIMMPMP	O	3	1	3	3
** SUBTOTAL **								6
* FUNCTIONAL DESCRIPTION ---> COMBINE DATA FOR CSCS & WSSC MNTHLY BMMS								
9.0	M	PIPIF	PIIIDAA	I	70	46000	3220000	38640000
9.0	M	PIPIF	PIMIFAC	I	70	50000	3500000	42000000
9.0	M	PIPIF	PIIIFAB	O	50	10000	500000	6000000
9.0	M	PIPIF	PIMIFAC	O	70	50000	3500000	42000000
** SUBTOTAL **								128640000
* FUNCTIONAL DESCRIPTION ---> PREP CSCS BASE M-H FOR MNTHLY BMMS								
9.1	M	PIPIH	PIIIFAB	I	50	10000	500000	6000000
9.1	M	PIPIH	PIIIGAD	I	50	10000	500000	6000000
9.1	M	PIPIH	PIIIGAD	O	50	10000	500000	6000000
9.1	M	PIPIH	PIIIJAA	O	50	10000	500000	6000000
** SUBTOTAL **								24000000
* FUNCTIONAL DESCRIPTION ---> SELECT-CONVERT WSC DATA FOR MONTHLY BMMS								
9.2	A	PIPIL	PIIIFAC	I	70	50000	3500000	3500000
9.2	A	PIPIL	PIIILAG	O	40	20000	800000	800000
** SUBTOTAL **								4300000
* FUNCTIONAL DESCRIPTION ---> PRODUCE SUMMARY FILES-WSSC MONTHLY BMMS								
9.3	M	PIPIN	PIIILAG	I	40	20000	800000	9600000
9.3	M	PIPIN	PIIIMAJ	I	40	20000	800000	9600000
9.3	M	PIPIN	PIIIMAJ	O	40	20000	800000	9600000
9.3	M	PIPIN	PIMINAK	O	40	50000	2000000	24000000
9.3	M	PIPIN	PIMINAL	O	40	10000	400000	4800000
9.3	M	PIPIN	PIMINAM	O	40	5000	200000	2400000
9.3	M	PIPIN	PIMINAN	O	40	2500	100000	1200000
** SUBTOTAL **								61200000
** TOTAL **								1,141,663,489

FUNC #	F Q	PROGRAM ID	FILE ID	I/O	REC SIZE	RECORD VOLUME	PERIOD TOTAL	ANNUALIZED TOTAL
* FUNCTIONAL DESCRIPTION ---> ANNUAL AR AUTODIN MOD BUILD (H069R)								
7.0	A	PIPHC	PIIHAAA	I	80	2000	160000	160000
7.0	A	PIPHC	HEADER	I	80	1	80	80
7.0	A	PIPHC	TRAILER	I	80	1	80	80
7.0	A	PIPHC	PIIHCMS	O	80	2000	160000	160000
** SUBTOTAL **								320160
* FUNCTIONAL DESCRIPTION ---> SEP OF OACS FOR ANNUAL AR H069 ASO BUILD								
8.0	A	PIPMD	PIIMAAA	I	80	400000	32000000	32000000
8.0	A	PIPMD	COUNT	I	80	1	80	80
8.0	A	PIPMD	HEADER	I	80	1	80	80
8.0	A	PIPMD	TRAILER	I	80	1	80	80
8.0	A	PIPMD	PIMMJXX	I	80	400000	32000000	32000000
8.0	A	PIPMD	COUNT	I	80	1	80	80
8.0	A	PIPMD	HEADER	I	80	1	80	80
8.0	A	PIPMD	TRAILER	I	80	1	80	80
8.0	A	PIPMD	PIMIIMD	O	80	36000	2880000	2880000
8.0	A	PIPMD	COUNT	O	80	1	80	80
8.0	A	PIPMD	HEADER	O	80	1	80	80
8.0	A	PIPMD	TRAILER	O	80	1	80	80
** SUBTOTAL **								66880720
* FUNCTIONAL DESCRIPTION ---> DETERMINE FILESTAT FOR AR H069 ASO BUILD								
8.1	A	PIPMJ	PIIMDXX	I	80	36000	2880000	2880000
8.1	A	PIPMJ	COUNT	I	80	1	80	80
8.1	A	PIPMJ	HEADER	I	80	1	80	80
8.1	A	PIPMJ	TRAILER	I	80	1	80	80
8.1	A	PIPMJ	PIMMJMP	I	0	0	0	0
8.1	A	PIPMJ	PIMVMDT	O	80	36000	2880000	2880000
8.1	A	PIPMJ	PIMVMDT	O	80	36000	2880000	2880000
8.1	A	PIPMJ	COUNT	O	80	1	80	80
8.1	A	PIPMJ	HEADER	O	80	1	80	80
8.1	A	PIPMJ	TRAILER	O	80	1	80	80
8.1	A	PIPMJ	PIMMJMP	O	3	1	3	3
** SUBTOTAL **								8640483

FUNC #	F Q	PROGRAM ID	FILE ID	I/O	REC SIZE	RECORD VOLUME	PERIOD TOTAL	ANNUALIZED TOTAL
* FUNCTIONAL DESCRIPTION ---> FACTORING $'S FOR ACCTG OPER (ASD)								
4.1	A	PIPEE	PIIEDAA	I	50	300000	15000000	15000000
4.1	A	PIPEE	PIMSRSJ	I	80	150	12000	12000
4.1	A	PIPEE	PIMAEAM	I	80	25	2000	2000
4.1	A	PIPEE	PIMBEAD	I	30	3300	99000	99000
4.1	A	PIPEE	PIMEEAA	O	40	5000	200000	200000
4.1	A	PIPEE	PIMEEAB	O	60	10000	600000	600000
** SUBTOTAL **								15913000
* FUNCTIONAL DESCRIPTION ---> FY DETERMINATION OF POSSESSED HRS DATA								
5.0	M	PIPFC	6033B	I	70	125	8750	105000
5.0	M	PIPFC	PIIFCAA	O	70	14000	980000	11760000
** SUBTOTAL **								11865000
* FUNCTIONAL DESCRIPTION ---> CONSOLIDATE POSSESSED HRS DATA (6033B)								
5.1	M	PIPFE	PIIFDAA	I	70	14000	980000	11760000
5.1	M	PIPFE	PIMFEAA	I	50	14000	700000	8400000
5.1	M	PIPFE	PIMFEAA	O	50	2000	100000	1200000
5.1	M	PIPFE	PIMFEAB	O	40	9	360	4320
5.1	M	PIPFE	PIMFEAD	O	40	17	680	8160
5.1	M	PIPFE	PIMFEAE	O	40	17	680	8160
5.1	M	PIPFE	PIMFEAM	O	30	1	30	360
5.1	M	PIPFE	PIMFEAN	O	40	17	680	8160
5.1	M	PIPFE	PIMFEWS	O	70	14000	980000	11760000
** SUBTOTAL **								33149160
* FUNCTIONAL DESCRIPTION ---> PROCESS FUEL (POL) COSTS (D022A)								
6.0	A	PIPGE	PIIGBBB	I	30	1000	30000	30000
6.0	A	PIPGE	PIMGEAA	O	30	1000	30000	30000
** SUBTOTAL **								60000

FUNC #	F Q	PROGRAM ID	FILE ID	I/O	REC SIZE	RECORD VOLUME	PERIOD TOTAL	ANNUALIZED TOTAL
* FUNCTIONAL DESCRIPTION ---> MILITARY PERS CENTER FILE PROCESSING								
2.0	Q	PIPBC	PIIBCMP	O	70	790000	55300000	221200000
** SUBTOTAL **								410802080
* FUNCTIONAL DESCRIPTION ---> ASSIGN PERS SUMMARIZATION & SELECTION								
2.1	Q	PIPBE	PIIBDMP	I	70	790000	55300000	221200000
2.1	Q	PIPBE	PIMBEAC	I	70	100000	7000000	28000000
2.1	Q	PIPBE	PJMA360	I	10	100	1000	4000
2.1	Q	PIPBE	PIMBEAC	O	70	100000	7000000	28000000
2.1	Q	PIPBE	PIMBEAA	O	50	100000	5000000	20000000
2.1	Q	PIPBE	PIMBEAB	O	70	100000	7000000	28000000
2.1	Q	PIPBE	PIMBEAD	O	30	125	3750	15000
2.1	Q	PIPBE	PIMBEAD	O	30	125	3750	15000
** SUBTOTAL **								325234000
* FUNCTIONAL DESCRIPTION ---> PROD SEL & EDIT SPARES & MODS COST XTRAC								
3.0	Q	PIPDC	PIIHCMS	I	80	2000	160000	640000
3.0	Q	PIPDC	PIIDCAA	O	80	2000	160000	640000
** SUBTOTAL **								1280000
* FUNCTIONAL DESCRIPTION ---> PROD A WSSC REPL SPARE & MODS XTRAC								
3.1	Q	PIPDE	PIIDDAA	I	80	2000	160000	640000
3.1	Q	PIPDE	PIMDEAB	I	30	2000	60000	240000
3.1	Q	PIPDE	PIMDEAB	O	30	2000	60000	240000
3.1	Q	PIPDE	PIMDEAA	O	30	2000	60000	240000
** SUBTOTAL **								1360000
* FUNCTIONAL DESCRIPTION ---> SELECTION OF RECORDS FOR ASO H069								
4.0	A	PIPEB	PIMVMDT	I	80	400000	32000000	32000000
4.0	A	PIPEB	PIMAEAK	I	80	500	40000	40000
4.0	A	PIPEB	PIMEBAA	O	50	300000	15000000	15000000
** SUBTOTAL **								47040000

FUNC #	F Q	PROGRAM ID	FILE ID	I/O	REC SIZE	RECORD VOLUME	PERIOD TOTAL	ANNUALIZED TOTAL
* FUNCTIONAL DESCRIPTION ---> EST & MAINT DATA TABLE & FACTORS								
1.0	A	PIPAE	PIIKTDA	I	80	7140	571200	571200
1.0	A	PIPAE	PIMAEAJ	I	80	644	51520	51520
1.0	A	PIPAE	PIMAEAK	I	80	2	160	160
1.0	A	PIPAE	PIMAEAL	I	80	6	480	480
1.0	A	PIPAE	PIMAEAM	I	80	6	480	480
1.0	A	PIPAE	PIMAEAN	I	80	150	12000	12000
1.0	A	PIPAE	PIMAEAP	I	80	6	480	480
1.0	A	PIPAE	PIMAEBP	I	80	2	160	160
1.0	A	PIPAE	PIMAEAQ	I	80	115	9200	9200
1.0	A	PIPAE	PIMAEAR	I	80	1	80	80
1.0	A	PIPAE	PIMAERT	I	80	1	80	80
1.0	A	PIPAE	PIMAEAS	I	80	215	17200	17200
1.0	A	PIPAE	PIMAEAT	I	80	30	2400	2400
1.0	A	PIPAE	PIMAEAU	I	80	30	2400	2400
1.0	A	PIPAE	PIMAEAV	I	80	430	34400	34400
1.0	A	PIPAE	PIMAEAY	I	80	400	32000	32000
1.0	A	PIPAE	PIMAEAJ	O	80	644	51520	51520
1.0	A	PIPAE	PIMAEAK	O	80	22	1760	1760
1.0	A	PIPAE	PIMAEAL	O	80	6	480	480
1.0	A	PIPAE	PIMAEAM	O	80	6	480	480
1.0	A	PIPAE	PIMAEAP	O	80	6	480	480
1.0	A	PIPAE	PIMAEBP	O	80	2	160	160
1.0	A	PIPAE	PIMAERT	O	80	1	80	80
1.0	A	PIPAE	PIMAEAN	O	80	150	12000	12000
1.0	A	PIPAE	PIMAEAQ	O	80	115	9200	9200
1.0	A	PIPAE	PIMAEAR	O	80	1	80	80
1.0	A	PIPAE	PIMAEAS	O	80	215	17200	17200
1.0	A	PIPAE	PIMAEAT	O	80	30	2400	2400
1.0	A	PIPAE	PIMAEAU	O	80	30	2400	2400
1.0	A	PIPAE	PIMAEAV	O	80	430	34400	34400
1.0	A	PIPAE	PIMAEAY	O	80	400	32000	32000
1.0	A	PIPAE	PIIAEAH	O	80	1000	80000	80000
** SUBTOTAL **								978880
* FUNCTIONAL DESCRIPTION ---> MILITARY PERS CENTER FILE PROCESSING								
2.0	Q	PIPBC	PIIBACA	I	60	220000	13200000	52800000
2.0	Q	PIPBC	PIIBABA	I	60	110000	6600000	26400000
2.0	Q	PIPBC	PIIBAAA	I	60	460000	27600000	110400000
2.0	Q	PIPBC	PIMAEAT	I	20	26	520	2080

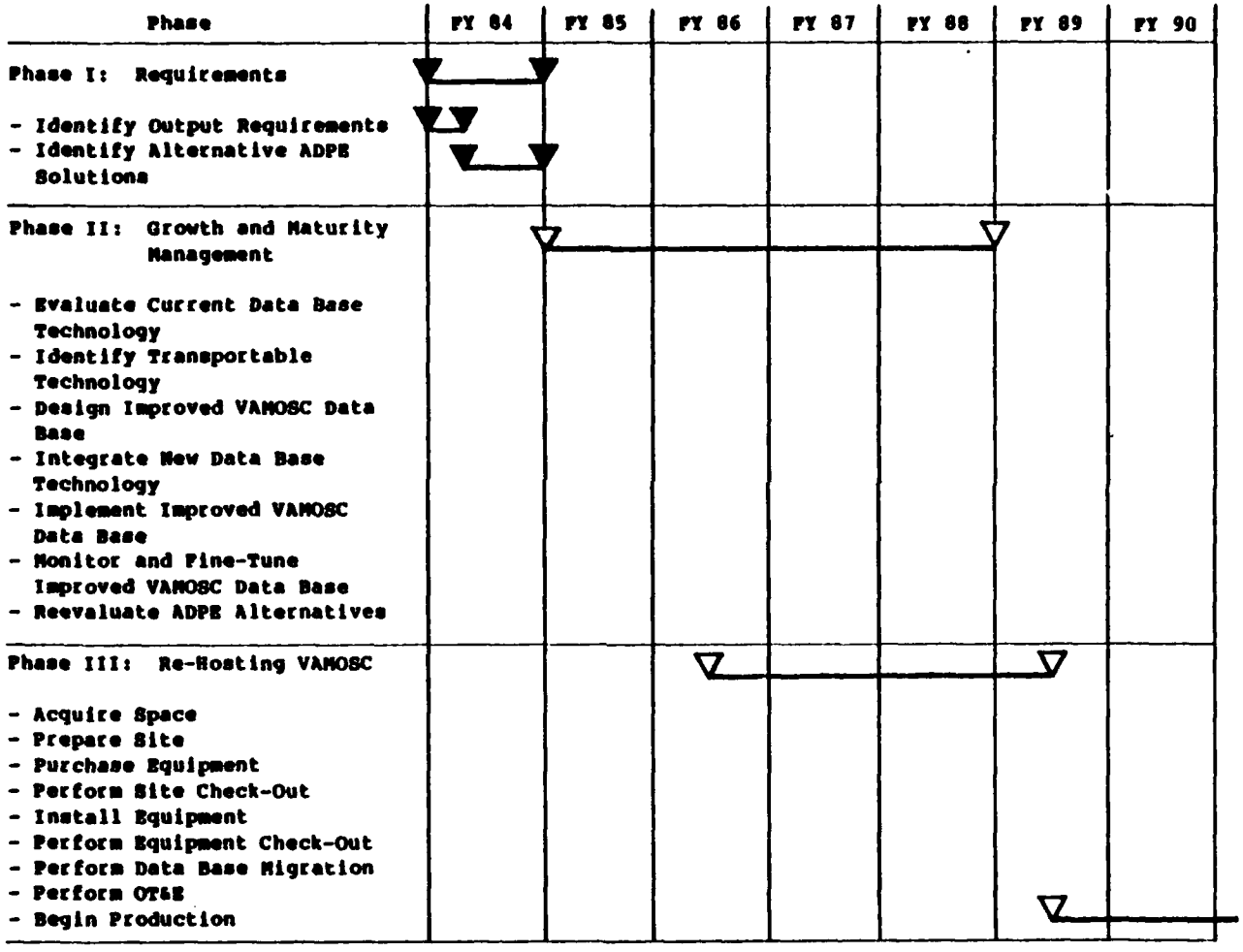
[illegible] NOT FILMED

APPENDIX

DATA BASE FOR FUNCTIONAL PROCESSING LOAD ANALYSIS

This appendix presents the data that were taken from the functional descriptions of the three data subsystems and the preprocessor subsystem of VAMOSC. These data describe the VAMOSC processing load.

VAMOSC DATA MANAGEMENT MILESTONES



- Monitor and fine-tune the improved VAMOSC data base while it is running in the CYBER environment.

- Reevaluate ADPE alternatives with respect to hardware technology advances and applicable software package advances.

5.2.3 Phase III: Considerations for Re-Hosting the VAMOSC Data System

- Acquire building space/floor space.

- Prepare site.

- Purchase equipment.

- Perform site check-out.

- Install equipment.

- Perform equipment check-out.

- Perform data base migration.

- Perform OT&E.

- Begin production.

5.1.5 Recommendations

We recommend the implementation of Alternative 1, which is to say that we do not at this time recommend a transition to an alternative ADPE host computer system. The major reason for not recommending the implementation of Alternatives 2, 3, and 4 is the adequacy of Alternative 1, which provides a no-cost vehicle for continued support of the VAMOSC data system. Furthermore, VAMOSC data system growth can be supported by the current CYBER 170/730 host and much-needed historic data archive maturity can be achieved in a stable, reliable ADPE environment.

5.2 FRAMEWORK FOR THE OUT-YEAR MANAGEMENT OF THE VAMOSC DATA SYSTEM

The following outline, with supporting milestone chart, provides a management framework within which the VAMOSC data system can grow and mature for the next five years. The outline is divided into three sections, or phases, the first of which was completed with the delivery of this report.

5.2.1 Phase I: Requirements Definition

- Identify the output data requirements by quantifying annual VAMOSC data production through 1995 and by categorizing data types by their access requirements and frequency of re-use.

- Identify and evaluate alternative technology approaches to processing and storing VAMOSC-produced data.

5.2.2 Phase II: Growth Management

- Evaluate current VAMOSC data base technology.

- Identify a data base technology that is transportable from the current ADPE technology to the alternative technologies that have been evaluated in Phase I.

- Use available off-the-shelf, field-proven data base products and technologies in this analysis.

- Purchase the data base technology that meets the foregoing requirements.

- Design the improved VAMOSC data base using the purchased data base technology products.

- Integrate the new data base technology into the current CYBER 170/730 host environment.

- Implement the improved VAMOSC data base in the improved CYBER data base environment.

projected 5-year size of 1 billion characters up to the projected 10-year size of 1.6 billion characters. We expect the CYBER 170/720 to have sufficient processing capability to support the VAMOSC data system processing requirement, because it matches every capability that the CYBER 170/730 has except the instruction speed. The model 170/730 processes an average of 2.2 million instructions per second (MIPS), and the Model 170/720 processes an average of 1.54 MIPS. This difference in processing speed is not expected to affect the Model 170/720's capability of satisfying the VAMOSC data processing requirement, since VAMOSC is a data management system and as such depends on I/O speed for processing efficiency. A benefit, derived from choosing an ADPE alternative from the CDC CYBER family, is realized when one considers the fact that all the software and all the hardware currently operating on the CYBER 170/730 host will also operate on the CYBER 170/720 with no change. This transportable compatibility represents substantial savings in time and money and is an important factor to consider whenever a computer system re-hosting is studied.

5.1.3 Alternative 3: IBM 4341

Alternative 3, presented in Chapter Four, is a feasible ADPE alternative and has the capability to supply the data services required to support the VAMOSC data system.

The IBM 4341 on-line data storage facility is capable of supporting the current data base archive discussed in Chapter Two and is capable of supporting the growth of the VAMOSC historic archive past the projected 5-year size of 1 billion characters up to the projected 10-year size of 1.6 billion characters. We expect the IBM 4341 to have sufficient processing capability to support the VAMOSC data system processing requirement based on its CPU cycle time (faster than of either the CYBER 170/720 or the CYBER 170/730), main storage capacity (more than of either the CYBER 170/720 or the CYBER 170/730), and its competitive position within the mainframe marketplace with respect to the CYBER 170/720-730 models.

5.1.4 Alternative 4: UNIVAC 1100/70

Alternative 4, presented in Chapter Four, is a feasible ADPE alternative and has the capability to supply the data services required to support the VAMOSC data system.

The UNIVAC 1100/70 on-line data storage facility is capable of supporting the current data base archive discussed in Chapter Two and is capable of supporting the growth of the VAMOSC historic archive past the projected 5-year size of 1 billion characters up to the projected 10-year size of 1.6 billion characters. We expect the UNIVAC 1100/70 to have sufficient processing capability to support the VAMOSC data system processing requirement based on its competitive position in the mainframe marketplace with respect to the CYBER 170/720-730 models.

CHAPTER FIVE

ALTERNATIVES DISCUSSION AND RECOMMENDATIONS

In this chapter the ADPE alternatives, described in Chapters Three and Four, are discussed with respect to their feasibility as an alternative ADPE system for replacement of the CDC CYBER 170/730, which currently hosts the VAMOSC data system. Recommendations are made with respect to the applicability of implementing such an alternative. In addition, an outline and a high-level milestone chart are presented as a possible framework within which future planning for the VAMOSC program can be accomplished.

5.1 DISCUSSION OF ALTERNATIVES

5.1.1 Alternative 1: The Current System, CDC CYBER 170/730

Alternative 1, presented and discussed in Chapter Three, is a feasible ADPE alternative and has the capability to supply data services in support of the VAMOSC data system.

The CYBER 170/730 on-line data storage facility is capable of supporting the current data base archive discussed in Chapter Two and is capable of supporting the growth of the VAMOSC historic data archive past the projected five-year size of 1 billion characters. The results of the Chapter Four processing load analysis indicate that the CYBER 170/730 has sufficient processing capability to support the VAMOSC data system processing requirement. Moreover, the CYBER computer configuration may be upgraded (as discussed in Chapter Three) to a dual CPU system, and additional large-capacity (1.3 billion characters) CDC Model 885 disk storage units are due for installation within the next fiscal year (FY 1985).

5.1.2 Alternative 2: CDC CYBER 170/720

Alternative 2, presented in Chapter Four, is a feasible ADPE alternative and has the capability to supply the data services required to support the VAMOSC data system.

The CYBER 170/720 on-line data storage facility is capable of supporting the current data base archive discussed in Chapter Two and is capable of supporting the growth of the VAMOSC historic archive past the

[illegible] BLANK-NOT FILMED

TABLE 4-6

ALTERNATIVE MATRIX

Characteristic	CYBER 170/720	UNIVAC 1100/70	IBM 4341
Main Memory	Y	Y	Y
Expansion	Y	Y	Y
Field Expansion	Y	Y	Y
Dual Processor	Y	Y	N
Disk Expansion*	Y	Y	Y
Communications Expansion	Y	Y	Y
System Upgrade	Y	Y	Y**
Native DBMS	Y	Y	Y
System 2000	Y	Y	Y
Application	Y	Y	Y
Compilers	Y	Y	Y
Conversion	N	Y	Y
Programs	N	Y	Y
Data Files	N	Y	Y

*Expansion to satisfy 5- and 10-year on-line data requirement (Table 2-4) within the 4300 family.
**Within the 4300 family of computers.

4.2.4 Alternative Vendor Selection Matrix

On the basis of our analysis of VAMOSC, we have developed a model (see Sections 4.1.1 and 4.1.2) that defines certain performance and capacity requirements for acceptable processing. These requirements served as a foundation for identifying alternative hardware configurations. The VAMOSC data collected and analyzed provide substantial input in selecting and evaluating alternative systems. In addition to the characteristics examined by our model, there are other system and support characteristics that must be evaluated. These characteristics typically fall into four major categories:

- Costs
  - -- One-time
  - -- Continuing
- Equipment Component Characteristics
  - -- Speed
  - -- Capacity
  - -- Compatibility
  - -- Special features
- Expansion Potential
  - -- Compatible equipment
  - -- Compatible software environment
- Vendor Support
  - -- Program
  - -- Training
  - -- Existing software
  - -- Documentation

The matrix we have prepared (Table 4-6) does not elaborate on the costs and vendor support capabilities for alternatives. The matrix is intended to provide high-level comparison of the alternatives' ability to satisfy the generic configuration.

FUNC #	F Q	PROGRAM ID	FILE ID	I/O	REC SIZE	RECORD VOLUME	PERIOD TOTAL	ANNUALIZED TOTAL
* FUNCTIONAL DESCRIPTION ---> EST. PERSONNEL ASSIGNMENTS & STRENGTHS								
3.0	A	PIPPX	VARIOUS		0	0	0	0
** SUBTOTAL **								0
* FUNCTIONAL DESCRIPTION ---> ASSIGN GELOC'S TO AUTHORIZED AIRCREW TBL								
3.1	A	VARIOUS	VARIOUS		0	0	0	0
** SUBTOTAL **								0
* FUNCTIONAL DESCRIPTION ---> SORT AIRCRAFT CREW COMPOSITION FILE								
3.1.	A	PISP1	PIMAEAV	I	30	1000	30000	30000
3.1.	A	PISP1	PIMP1AS	O	30	1000	30000	30000
** SUBTOTAL **								60000
* FUNCTIONAL DESCRIPTION ---> SORT CMD/BASE FLYING OPS RATIO FILE								
3.1.	A	PISP2	PIMNOCO	I	60	2000	120000	120000
3.1.	A	PISP2	PIMP2AS	O	60	2000	120000	120000
** SUBTOTAL **								240000
* FUNCTIONAL DESCRIPTION ---> BUILD A TABLE FROM SORTED FLYING OPS								
3.1.	A	PIPP3	PIMP2AS	I	60	2000	120000	120000
3.1.	A	PIPP3	PIMP1AS	I	30	1000	30000	30000
3.1.	A	PIPP3	PIMP3AA	O	50	10000	500000	500000
** SUBTOTAL **								650000
* FUNCTIONAL DESCRIPTION ---> DEVELOP AUTHORIZED AIRCREW RATIO								
3.2	A	VARIOUS	VARIOUS		0	0	0	0
** SUBTOTAL **								0

FUNC #	F Q	PROGRAM ID	FILE ID	I/O	REC SIZE	RECORD VOLUME	PERIOD TOTAL	ANNUALIZED TOTAL
* FUNCTIONAL DESCRIPTION ---> SORT INTERIM AUTH AIRCREW FILE								
3.2.	A	PISP4	PIMP3AA	I	50	10000	500000	500000
3.2.	A	PISP4	PIMP4AS	O	50	10000	500000	500000
** SUBTOTAL **								1000000
* FUNCTIONAL DESCRIPTION ---> READ SORTED INTERIM AUTH AIRCREW FILE *2								
3.2.	A	PIPP5	PIMP4AS	I	50	20000	1000000	1000000
3.2.	A	PIPP5	PIMP5AA	O	50	10000	500000	500000
** SUBTOTAL **								1500000
* FUNCTIONAL DESCRIPTION ---> DEVEL PERS STRENGTH FILES & ACT A/C INFO								
3.3	A	VARIOUS	VARIOUS		0	0	0	0
** SUBTOTAL **								0
* FUNCTIONAL DESCRIPTION ---> SORT MDS/SECURITY FILE								
3.3.	A	PISP6	PIMAEAS	I	40	150	6000	6000
3.3.	A	PISP6	PIMP6AS	O	40	150	6000	6000
** SUBTOTAL **								12000
* FUNCTIONAL DESCRIPTION ---> LOAD MPC EXTRACT FROM DUMPTAPE TO DISK								
3.3.	A	PIOP7	PIMBEAA	I	50	100000	5000000	5000000
3.3.	A	PIOP7	PIMBEAA	O	50	100000	5000000	5000000
** SUBTOTAL **								10000000
* FUNCTIONAL DESCRIPTION ---> SORT MPC EXTRACT FILE								
3.3.	A	PISP8	PIMBEAA	I	50	100000	5000000	5000000
3.3.	A	PISP8	PIMP8AS	O	50	100000	5000000	5000000
** SUBTOTAL **								10000000

FUNC #	F Q	PROGRAM ID	FILE ID	I/O	REC SIZE	RECORD VOLUME	PERIOD TOTAL	ANNUALIZED TOTAL
* FUNCTIONAL DESCRIPTION ---> READ & PROCESS EXTRACTED SORTED FILES								
3.3.	A	PIPP9	PIMP5AA	I	50	1000	50000	50000
3.3.	A	PIPP9	PIMP6AS	I	40	150	6000	6000
3.3.	A	PIPP9	PIMP8AS	I	50	100000	5000000	5000000
3.3.	A	PIPP9	PIC44V3	I	190	100000	19000000	19000000
3.3.	A	PIPP9	PIMAEBP	I	240	4	960	960
3.3.	A	PIPP9	PIMP9AB	I	60	1000	60000	60000
3.3.	A	PIPP9	PIMP5AA	I	50	1000	50000	50000
3.3.	A	PIPP9	PIC44V3	O	190	100000	19000000	19000000
3.3.	A	PIPP9	PIMP9AA	O	80	100000	8000000	8000000
3.3.	A	PIPP9	PIMP9AB	O	60	1000	60000	60000
3.3.	A	PIPP9	PIMP9AB	O	60	1000	60000	60000
** SUBTOTAL **								51286960
* FUNCTIONAL DESCRIPTION ---> PRODUCE ACTUAL AIRCREW & CREW RATIO REP								
3.4	A	VARIOUS	VARIOUS		0	0	0	0
** SUBTOTAL **								0
* FUNCTIONAL DESCRIPTION ---> SORT ACTUAL AIRCREW FILE								
3.4.	A	PISPA	PIMP9AB	I	60	1000	60000	60000
3.4.	A	PISPA	PIMPAAS	O	60	1000	60000	60000
** SUBTOTAL **								120000
* FUNCTIONAL DESCRIPTION ---> READ & PROCESS FOR PRINT LINE								
3.4.	A	PIPPB	PIMPAAS	I	60	1000	60000	60000
3.4.	A	PIPPB	PIMPBAR	O	140	2000	280000	280000
3.4.	A	PIPPB	PIMPBAA	O	20	2000	40000	40000
3.4.	A	PIPPB	PIMPBAB	O	70	500	35000	35000
** SUBTOTAL **								415000
* FUNCTIONAL DESCRIPTION ---> COMPLETE PERSONNEL STRENGTH FILES								
3.5	A	VARIOUS	VARIOUS		0	0	0	0
** SUBTOTAL **								0

FUNC #	F Q	PROGRAM ID	FILE ID	I/O	REC SIZE	RECORD VOLUME	PERIOD TOTAL	ANNUALIZED TOTAL
* FUNCTIONAL DESCRIPTION ---> SORT PERSONNEL STRENGTH FILE								
3.5.	A	PISPC	PIMP9AA	I	80	100000	8000000	8000000
3.5.	A	PISPC	PIMPCAS	O	80	100000	8000000	8000000
** SUBTOTAL **								16000000
* FUNCTIONAL DESCRIPTION ---> READ SORTED FILE								
3.5.	A	PIPPD	PIMPCASS	I	80	100000	8000000	8000000
3.5.	A	PIPPD	PIITEMP	I	80	10000	800000	800000
3.5.	A	PIPPD	PIMPDA2	O	80	2000	160000	160000
3.5.	A	PIPPD	PIITEMP	O	80	10000	800000	800000
3.5.	A	PIPPD	PIMPDA1	O	80	4000	320000	320000
3.5.	A	PIPPD	PIMPDAB	O	80	10000	800000	800000
** SUBTOTAL **								10880000
* FUNCTIONAL DESCRIPTION ---> SORT CMD/GEO/MDS LEVEL SUMMARY								
3.5.	A	PISOB	PIMFEAE	I	40	12000	480000	480000
3.5.	A	PISOB	PIMOBAS	O	40	12000	480000	480000
** SUBTOTAL **								960000
* FUNCTIONAL DESCRIPTION ---> SORT ADDED								
3.5.	A	PISPE	PIMFEAS	I	50	12000	600000	600000
3.5.	A	PISPE	PIMPEAS	O	50	12000	600000	600000
** SUBTOTAL **								1200000
* FUNCTIONAL DESCRIPTION ---> COLLECT $ ALLOC SECURITY PERSONNEL COSTS								
3.5.	A	PIPPF	PIMP6AS	I	40	150	6000	6000
3.5.	A	PIPPF	PIMOBAS	I	40	12000	480000	480000
3.5.	A	PIPPF	PIMPEAS	I	50	12000	600000	600000
3.5.	A	PIPPF	PIMPDAB	I	80	10000	800000	800000
3.5.	A	PIPPF	PIMPFA0	O	60	4000	240000	240000
3.5.	A	PIPPF	PIMPFB0	O	60	3000	180000	180000
** SUBTOTAL **								2306000

FUNC #	F Q	PROGRAM ID	FILE ID	I/O	REC SIZE	RECORD VOLUME	PERIOD TOTAL	ANNUALIZED TOTAL
* FUNCTIONAL DESCRIPTION ---> SORT MAINTENANCE PERSONNEL STRENGTH FILE								
3.5.	A	PISQC	PIMPDA1	I	80	4000	320000	320000
3.5.	A	PISQC	PIMQCAS	O	80	4000	320000	320000
** SUBTOTAL **								640000
* FUNCTIONAL DESCRIPTION ---> ALLOC MAINT COST BASED ON LABOR HR RATIO								
4.0	A	PIPQ0	PIMINAK	I	40	25000	1000000	1000000
4.0	A	PIPQ0	PIMINAL	I	40	5000	200000	200000
4.0	A	PIPQ0	PIMINAM	I	40	15000	600000	600000
4.0	A	PIPQ0	PIMINAN	I	40	500	20000	20000
4.0	A	PIPQ0	PIMQABS	I	670	10000	6700000	6700000
4.0	A	PIPQ0	PIMQCAS	I	80	1000	80000	80000
4.0	A	PIPQ0	PIMQ0A0	O	810	30000	24300000	24300000
4.0	A	PIPQ0	PIMQ0C0	O	60	500	30000	30000
4.0	A	PIPQ0	PIIANAL	O	140	0	0	0
** SUBTOTAL **								32930000
* FUNCTIONAL DESCRIPTION ---> ALLOC OPS COSTS & STRENGTHS								
4.1	A	PIPQI	PIMPDAB	I	80	5000	400000	400000
4.1	A	PIPQI	PIMQBAS	I	140	1000	140000	140000
4.1	A	PIPQI	PIMN0C0	I	60	2000	120000	120000
4.1	A	PIPQI	PIMPBAB	I	70	500	35000	35000
4.1	A	PIPQI	PIMQ1B0	O	190	4000	760000	760000
4.1	A	PIPQI	PIMQ1D0	O	60	200	12000	12000
4.1	A	PIPQI	PIIANAL	O	140	0	0	0
** SUBTOTAL **								1467000
* FUNCTIONAL DESCRIPTION ---> ALLOC BOS COSTS								
5.0	A	PIPR0	PIMRBAS	I	40	5000	200000	200000
5.0	A	PIPR0	PIMRAAS	I	40	12000	480000	480000
5.0	A	PIPR0	PIMRCBS	I	60	1000	60000	60000
5.0	A	PIPR0	PIMFEAM	I	30	500	15000	15000
5.0	A	PIPR0	PIMPDA2	I	80	2000	160000	160000
5.0	A	PIPR0	PIMBEAD	I	30	500	15000	15000
5.0	A	PIPR0	PIMR0A0	O	230	3000	690000	690000
5.0	A	PIPR0	PIMR0B0	O	420	2000	840000	840000

FUNC #	F Q	PROGRAM ID	FILE ID	I/O	REC SIZE	RECORD VOLUME	PERIOD TOTAL	ANNUALIZED TOTAL
* FUNCTIONAL DESCRIPTION ---> ALLOC BOS COSTS								
5.0	A	PIPRO	PIMROE0	O	60	500	30000	30000
5.0	A	PIPRO	PIIANAL	O	140	0	0	0
** SUBTOTAL **								2490000
* FUNCTIONAL DESCRIPTION ---> SORT CMD/GELOC/MDS SUMMARY								
5.0.	A	PISRA	PIMFEAE	I	40	12000	480000	480000
5.0.	A	PISRA	PIMRAAS	O	40	12000	480000	480000
** SUBTOTAL **								960000
* FUNCTIONAL DESCRIPTION ---> SORT CMD/GELOC SUMMARY								
5.0.	A	PISRB	PIMFEAB	I	40	5000	200000	200000
5.0.	A	PISRB	PIMRBAS	O	40	5000	200000	200000
** SUBTOTAL **								400000
* FUNCTIONAL DESCRIPTION ---> SORT PCS/MED DATA FILES								
5.0.	A	PISRC	PIMQOC0	I	210	4000	840000	840000
5.0.	A	PISRC	PIMQOD0	I	210	1000	210000	210000
5.0.	A	PISRC	PIMPFB0	O	60	3000	180000	180000
5.0.	A	PISRC	PIMRCBS	O	60	1000	60000	60000
** SUBTOTAL **								1290000
* FUNCTIONAL DESCRIPTION ---> SUM PCS COSTS & COMPUTE MED COSTS								
6.0	A	PIPS0	PIMR5AS	I	60	1000	60000	60000
6.0	A	PIPS0	PIMAEAR	I	10	1	10	10
6.0	A	PIPS0	PIMS0AS	O	60	2000	120000	120000
** SUBTOTAL **								180010
* FUNCTIONAL DESCRIPTION ---> SORT PIMRCBS & PIMROE0								
6.0.	A	PISR5	PIMRCBS	I	60	1000	60000	60000
6.0.	A	PISR5	PIMROE0	I	60	500	30000	30000
6.0.	A	PISR5	PIMR5AS	O	60	1000	60000	60000
** SUBTOTAL **								150000

FUNC #	F Q	PROGRAM ID	FILE ID	I/O	REC SIZE	RECORD VOLUME	PERIOD TOTAL	ANNUALIZED TOTAL
* FUNCTIONAL DESCRIPTION ---> PROCESS DEPOT MAINTENANCE DATA								
7.0	A	PIPTO	PIMS3CS	I	250	15000	3750000	3750000
7.0	A	PIPTO	PIMN0B0	I	60	2000	120000	120000
7.0	A	PIPTO	PIMN0A0	I	50	1000	50000	50000
7.0	A	PIPTO	PIMAEAN	I	10	200	2000	2000
7.0	A	PIPTO	PIMT0A0	O	220	12000	2640000	2640000
7.0	A	PIPTO	PIMT0B0	O	200	5000	1000000	1000000
7.0	A	PIPTO	PIMT0C0	O	200	5000	1000000	1000000
7.0	A	PIPTO	PIMT0D0	O	30	500	15000	15000
7.0	A	PIPTO	PIIANAL	O	140	0	0	0
** SUBTOTAL **								8577000
* FUNCTIONAL DESCRIPTION ---> PROCESS DEP MODS,TRNG,MUNITS,POL COSTS								
8.0	A	PIPU0	PIMDEAA	I	30	5000	150000	150000
8.0	A	PIPU0	PIMT3CS	I	20	1000	20000	20000
8.0	A	PIPU0	PIMT6FS	I	30	200	6000	6000
8.0	A	PIPU0	PIMT5ES	I	20	1200	24000	24000
8.0	A	PIPU0	PIMN0B0	I	60	2000	120000	120000
8.0	A	PIPU0	PIMT4DS	I	20	2000	40000	40000
8.0	A	PIPU0	PIMN0A0	I	50	1000	50000	50000
8.0	A	PIPU0	PIMT0D0	I	30	4000	120000	120000
8.0	A	PIPU0	PIMU0A0	O	30	600	18000	18000
8.0	A	PIPU0	PIMU0C0	O	30	10000	300000	300000
8.0	A	PIPU0	PIMU0E0	O	30	10000	300000	300000
8.0	A	PIPU0	PIMU0F0	O	20	200	4000	4000
8.0	A	PIPU0	PIMU0G0	O	20	200	4000	4000
8.0	A	PIPU0	PIMU0I0	O	30	12000	360000	360000
8.0	A	PIPU0	PIIANAL	O	140	0	0	0
** SUBTOTAL **								1516000
* FUNCTIONAL DESCRIPTION ---> DEVELOP ANNUAL HISTORY FILES								
9.0	A	VARIUOS	VARIOUS		0	0	0	0
** SUBTOTAL **								0

FUNC #	F Q	PROGRAM ID	FILE ID	I/O	REC SIZE	RECORD VOLUME	PERIOD TOTAL	ANNUALIZED TOTAL
* FUNCTIONAL DESCRIPTION ---> BY MDS/CMD/BASE & BY MDS								
9.1	A	PIPV0	PIMU8HS	I	60	900	54000	54000
9.1	A	PIPV0	PIMU7GS	I	20	900	18000	18000
9.1	A	PIPV0	PIMR2BS	I	0	900	0	0
9.1	A	PIPV0	PIMS2BS	I	60	900	54000	54000
9.1	A	PIPV0	PIMU3CS	I	30	900	27000	27000
9.1	A	PIPV0	PIMRIAS	I	810	900	729000	729000
9.1	A	PIPV0	PIMU2BS	I	30	900	27000	27000
9.1	A	PIPV0	PIMU5ES	I	30	900	27000	27000
9.1	A	PIPV0	PIMR3CS	I	230	900	207000	207000
9.1	A	PIPV0	PIMR4DS	I	420	900	378000	378000
9.1	A	PIPV0	PIMTIAS	I	220	900	198000	198000
9.1	A	PIPV0	PIMSOAS	I	60	900	54000	54000
9.1	A	PIPV0	PIMU4DS	I	20	900	18000	18000
9.1	A	PIPV0	PIMUIAS	I	30	900	27000	27000
9.1	A	PIPV0	PIMU6FS	I	20	900	18000	18000
9.1	A	PIPV0	PIMT2BS	I	200	900	180000	180000
9.1	A	PIPV0	PIMV0A0	O	1320	200	264000	264000
9.1	A	PIPV0	PIMV0B0	O	1320	200	264000	264000
** SUBTOTAL **								2544000
* FUNCTIONAL DESCRIPTION ---> DEVELOP ANNUAL DOD HISTORY FILE								
9.2	A	PIPV1	PIMV0A0	I	1320	200	264000	264000
9.2	A	PIPV1	PIMT0C0	I	200	5000	1000000	1000000
9.2	A	PIPV1	PIMV1D0	O	530	200	106000	106000
** SUBTOTAL **								1370000
* FUNCTIONAL DESCRIPTION ---> PRODUCE ANNUAL REPORTS & UPDATE DB								
10.0	A	VARIOUS	VARIOUS		0	0	0	0
** SUBTOTAL **								0
* FUNCTIONAL DESCRIPTION ---> DEVELOP AF-DETAIL FY REPORT								
10.1	A	PIPW0	PIMV0I0	I	1320	200	264000	264000
10.1	A	PIPW0	PIMAEAU	I	10	13	130	130
10.1	A	PIPW0	PIIW0A0	I	1320	200	264000	264000
10.1	A	PIPW0	PIIW0AT	I	10	65	650	650

FUNC #	F G	PROGRAM ID	FILE ID	I/O	REC SIZE	RECORD VOLUME	PERIOD TOTAL	ANNUALIZED TOTAL
* FUNCTIONAL DESCRIPTION ---> DEVELOP AF-DETAIL FY REPORT								
10.1	A	PIPW0	PIMW0A0	O	1320	200	264000	264000
10.1	A	PIPW0	PIMW0AT	O	10	65	650	650
** SUBTOTAL **								793430
* FUNCTIONAL DESCRIPTION ---> PROCESS DOD-CAIG REPORT & DB								
10.2	A	PIPW1	PIMV1D0	I	530	200	106000	106000
10.2	A	PIPW1	PIMAEAU	I	10	13	130	130
10.2	A	PIPW1	PIIW1D0	I	530	200	106000	106000
10.2	A	PIPW1	PIIW1DT	I	10	65	650	650
10.2	A	PIPW1	PIMW1D0	O	530	200	106000	106000
10.2	A	PIPW1	PIMW1DT	O	10	65	650	650
** SUBTOTAL **								319430
* FUNCTIONAL DESCRIPTION ---> UPDATE PREVIOUS AF-HIST BY CMD/BASE								
10.3	A	PIPW2	PIMV0B0	I	1320	200	264000	264000
10.3	A	PIPW2	PIIW2B0	I	1320	200	264000	264000
10.3	A	PIPW2	PIIW2B0	O	1320	200	264000	264000
** SUBTOTAL **								792000
* FUNCTIONAL DESCRIPTION ---> PROVIDE FOR INTERROGATION FROM DOD-CAIG								
11.0	AR	PIPX0	PIMW1D0	I	530	200	106000	106000
11.0	AR	PIPX0	PIMW1DT	I	10	65	650	650
11.0	AR	PIPX0	REPORT	O	0	0	0	0
** SUBTOTAL **								106650
* FUNCTIONAL DESCRIPTION ---> PROVIDE FOR INTER FROM AF-HIST BY MDS								
12.0	AR	PIPY0	PIMW0A0	I	1320	200	264000	264000
12.0	AR	PIPY0	PIMW0AT	I	10	65	650	650
12.0	AR	PIPY0	REQUESTS	I	80	1	80	80
12.0	AR	PIPY0	REPORTS	O	0	0	0	0
** SUBTOTAL **								264730

FUNC #	F Q	PROGRAM ID	FILE ID	I/O	REC SIZE	RECORD VOLUME	PERIOD TOTAL	ANNUALIZED TOTAL
* FUNCTIONAL DESCRIPTION ---> PROVIDE CMD/BASE INTER FROM AF-HIST								
13.0	AR	PIPZ0	PIMW2B0	I	1320	1000	1320000	1320000
13.0	AR	PIPZ0	PIMW0AT	I	10	65	650	650
13.0	AR	PIPZ0	REQUESTS	I	80	1	80	80
13.0	AR	PIPZ0	PIIZ902	O	140	1000	140000	140000
13.0	AR	PIPZ0	PIIZ901	O	140	1000	140000	140000
13.0	AR	PIPZ0	PIIZ501	O	1320	1000	1320000	1320000
** SUBTOTAL **								2920730
** TOTAL **								183693940

FUNC #	F Q	PROGRAM ID	FILE ID	I/O	REC SIZE	RECORD VOLUME	PERIOD TOTAL	ANNUALIZED TOTAL
* FUNCTIONAL DESCRIPTION ---> PROVIDE TABLES AND FACTORS								
1.0	A	VARIOUS	VARIOUS		0	0	0	0
** SUBTOTAL **								0
* FUNCTIONAL DESCRIPTION ---> TABLE TRANSACTIONS								
1.1	A	PJPA1	PJIAAA0	I	80	500	40000	40000
1.1	A	PJPA1	PJIA1A0	O	80	500	40000	40000
1.1	A	PJPA1	PJIA1B0	O	80	500	40000	40000
** SUBTOTAL **								120000
* FUNCTIONAL DESCRIPTION ---> UPDATE TABLES A-D								
1.2	A	PJPA2	PJIA1A0	I	80	500	40000	40000
1.2	A	PJPA2	PJMA2A0	O	100	1700	170000	170000
1.2	A	PJPA2	PJMA2B0	O	30	700	21000	21000
1.2	A	PJPA2	PJMA2C0	O	50	600	30000	30000
1.2	A	PJPA2	PJMA2D0	O	20	300	6000	6000
1.2	A	PJPA2	PJIA2F0	O	132	0	0	0
1.2	A	PJPA2	PJIA2E0	O	132	0	0	0
** SUBTOTAL **								267000
* FUNCTIONAL DESCRIPTION ---> UPDATE TABLES E-I								
1.3	A	PJPA3	PJIA1B0	I	80	500	40000	40000
1.3	A	PJPA3	PJMA3E0	O	50	1500	75000	75000
1.3	A	PJPA3	PJMA3F0	O	20	10	200	200
1.3	A	PJPA3	PJMA3B0	O	10	100	1000	1000
1.3	A	PJPA3	PJMA3H0	O	20	300	6000	6000
1.3	A	PJPA3	PJMA3I0	O	40	200	8000	8000
** SUBTOTAL **								130200
* FUNCTIONAL DESCRIPTION ---> BUILD PRINT FILE								
1.4	A	PJPA3	PJIA2F0	I	132	0	0	0
1.4	A	PJPA3	PJIA3C0	I	132	0	0	0
1.4	A	PJPB1	PJMA2A0	I	100	1700	170000	170000
1.4	A	PJPB1	PJMA2B0	I	30	700	21000	21000

FUNC #	F Q	PROGRAM ID	FILE ID	I/O	REC SIZE	RECORD VOLUME	PERIOD TOTAL	ANNUALIZED TOTAL
* FUNCTIONAL DESCRIPTION ---> BUILD PRINT FILE								
1.4	A	PJPB1	PJMA2C0	I	50	600	30000	30000
1.4	A	PJPB1	PJMA2D0	I	20	300	6000	6000
1.4	A	PJPB1	PJMA3E0	I	50	1500	75000	75000
1.4	A	PJPB1	PJMA3F0	I	20	10	200	200
1.4	A	PJPB1	PJMA3G0	I	10	100	1000	1000
1.4	A	PJPB1	PJMA3H0	I	20	30	600	600
1.4	A	PJPB1	PJMA3I0	I	40	200	8000	8000
1.4	A	PJPB1	PJIB1A0	O	132	0	0	0
** SUBTOTAL **								311800
* FUNCTIONAL DESCRIPTION ---> ASSEMBLE INPUT FILES								
2.0	A	VARIOUS	VARIOUS		0	0	0	0
** SUBTOTAL **								0
* FUNCTIONAL DESCRIPTION ---> BUILD O&S COST EXPENDITURE FILE								
2.1	A	PJPE1	PIMEEAA	I	40	18000	720000	720000
2.1	A	PJPE1	PJMA3F0	I	20	10	200	200
2.1	A	PJPE1	PJMA2D0	I	20	300	6000	6000
2.1	A	PJPE1	PJME1A0	O	50	5000	250000	250000
2.1	A	PJPE1	PJME1C0	O	30	1	30	30
** SUBTOTAL **								976230
* FUNCTIONAL DESCRIPTION ---> BUILD TMS DATA WORK FILE								
2.2	A	PJPC4	PJMA3E0	I	50	1500	75000	75000
2.2	A	PJPC4	PJMC1B0	I	40	400000	16000000	16000000
2.2	A	PJPC4	PJMA2A0	I	100	1700	170000	170000
2.2	A	PJPC4	PJIC4A2	O	100	700	70000	70000
2.2	A	PJPC4	PJIC4A1	O	132	25	3300	3300
** SUBTOTAL **								16318300

FUNC #	F Q	PROGRAM ID	FILE ID	I/O	REC SIZE	RECORD VOLUME	PERIOD TOTAL	ANNUALIZED TOTAL
* FUNCTIONAL DESCRIPTION ---> BUILD TMS DATA FILE								
2.3	A	PJPC5	PJIC4A2	I	100	700	70000	70000
2.3	A	PJPC5	PJMA2B0	I	30	700	21000	21000
2.3	A	PJPC5	PJMC2B0	I	40	20	800	800
2.3	A	PJPC5	PJMC5A0	O	100	10000	1000000	1000000
2.3	A	PJPC5	PJMC5B0	O	40	1000	40000	40000
** SUBTOTAL **								1131800
* FUNCTIONAL DESCRIPTION ---> BUILD PERSONNEL DATA FILE								
2.4	A	PJPB3	PIMBEAB	I	70	70000	4900000	4900000
2.4	A	PJPB3	PIMAEAP	I	130	2	260	260
2.4	A	PJPB3	PIMAERT	I	20	1	20	20
2.4	A	PJPB3	PJMB3A0	O	50	20000	1000000	1000000
2.4	A	PJPB3	PJIB3B0	O	20	2200	44000	44000
2.4	A	PJPB3	PJIB3D0	O	132	9000	1188000	1188000
2.4	A	PJPB3	PJMB3C0	O	30	1	30	30
** SUBTOTAL **								7132310
* FUNCTIONAL DESCRIPTION ---> BUILD C-E BASE LABOR								
2.5	M	PJPM1	PJIM0A0	I	40	70000	2800000	33600000
2.5	A	PJPM1	PJMA2A0	I	100	1700	170000	170000
2.5	M	PJPM1	PJIM1A0	O	70	8000	560000	6720000
** SUBTOTAL **								40490000
* FUNCTIONAL DESCRIPTION ---> UPDATE CUMULATIVE BASE LABOR								
2.6	M	PJPM2	PJIM8A0	I	70	8000	560000	6720000
2.6	A	PJPM2	PJMM2A0	I	70	30000	2100000	2100000
2.6	A	PJPM2	PJMA2A0	I	100	1700	170000	170000
2.6	A	PJPM2	PJMM2A1	O	70	30000	2100000	2100000
** SUBTOTAL **								11090000

FUNC #	F Q	PROGRAM ID	FILE ID	I/O	REC SIZE	RECORD VOLUME	PERIOD TOTAL	ANNUALIZED TOTAL
* FUNCTIONAL DESCRIPTION ---> BUILD C-E BASE MATERIAL								
2.7	A	PJPM3	PIIYGLA	I	80	150	12000	12000
2.7	A	PJPM3	PJMA2A0	I	100	1700	170000	170000
2.7	M	PJPM3	PJIM3A0	O	20	100	2000	24000
** SUBTOTAL **								206000
* FUNCTIONAL DESCRIPTION ---> UPDATE CUMULATIVE BASE MATERIAL								
2.8	M	PJPM4	PJIM6A0	I	20	100	2000	24000
2.8	A	PJPM4	PJMM4A0	I	20	1200	24000	24000
2.8	A	PJPM4	PJMM4A1	O	20	1200	24000	24000
** SUBTOTAL **								72000
* FUNCTIONAL DESCRIPTION ---> DUPLICATE EXTRACTION								
2.9	M	PJPM6	MNI70J0	I	100	75000	7500000	90000000
2.9	A	PJPM6	PJMA2A0	I	100	1700	170000	170000
2.9	M	PJPM6	PJIM6A0	O	40	68000	2720000	32640000
** SUBTOTAL **								122810000
* FUNCTIONAL DESCRIPTION ---> UPDATE PACKAGED WEIGHT FILE								
2.10	Q	PJPQ1	PJMQ0A0	I	20	150000	3000000	12000000
2.10	A	PJPQ1	B7.B794	I	30	255000	7650000	7650000
2.10	A	PJPQ1	PJMQ1A0	O	20	255000	5100000	5100000
** SUBTOTAL **								24750000
* FUNCTIONAL DESCRIPTION ---> BUILD INVENTORY DATA BASE								
2.11	A	PJPU1	PJIND39	I	80	106000	8480000	8480000
2.11	A	PJPU1	PJINVCH	I	80	60	4800	4800
2.11	A	PJPU1	PJID390	O	80	106000	8480000	8480000
2.11	A	PJPU1	PJIMLST	O	132	106000	13992000	13992000
2.11	A	PJPY2	CBINRAT	I	50	400000	20000000	20000000
2.11	A	PJPY2	CBII4FT	I	80	100000	8000000	8000000
2.11	A	PJPY2	PJMA2A0	I	100	1700	170000	170000
2.11	A	PJPY2	PJMY2A0	O	70	400000	28000000	28000000
2.11	A	PJPY2	PJMY2B0	O	80	2000	160000	160000

FUNC #	F Q	PROGRAM ID	FILE ID	I/O	REC SIZE	RECORD VOLUME	PERIOD TOTAL	ANNUALIZED TOTAL
* FUNCTIONAL DESCRIPTION ---> COMPUTE QUARTERLY COSTS								
1.0	M	VARIOUS				0	0	0
** SUBTOTAL **								0
* FUNCTIONAL DESCRIPTION ---> SELECT COST & MAINTENANCE DATA								
1.1	M	PKPHJ	PKIF001	I	80	1000	80000	960000
1.1	M	PKPHJ	PKIF002	I	80	75000	6000000	72000000
1.1	M	PKPHJ	PKIIABD	I	200	120	24000	288000
1.1	M	PKPHJ	PKIBNSD	I	80	9000	720000	8640000
1.1	M	PKPHJ	PKMBMSD	I	80	3000	240000	2880000
1.1	M	PKPHJ	PKIHJ10	O	40	8000	320000	3840000
1.1	M	PKPHJ	PKIHJ20	O	100	30000	3000000	36000000
1.1	M	PKPHJ	PKIHJ30	O	20	150	3000	36000
1.1	M	PKPHJ	PKIHJ40	O	80	200	16000	192000
1.1	Q	PKPJR	PKIDHCD	I	80	6000	480000	1920000
1.1	Q	PKPJR	PKIJNSD	I	100	39418	3941800	15767200
1.1	Q	PKPJR	PKIKT30	I	60	48933	2935980	11743920
1.1	Q	PKPJR	PKIJR10	O	60	28862	1731720	6926880
1.1	Q	PKPJR	PKIJR30	O	60	21575	1294500	5178000
1.1	Q	PKPJR	PKIJR20	O	100	96995	9699500	38798000
1.1	Q	PKPJJ	PKIJASD	I	70	9418	659260	2637040
1.1	Q	PKPJJ	PKIHKSD	I	50	25734	1286700	5146800
1.1	Q	PKPJJ	PKIJJ10	O	100	9418	941800	3767200
1.1	Q	PKPJT	PKMDUCD	I	280	300000	84000000	336000000
1.1	Q	PKPJT	PKIJT10	O	100	48933	4893300	19573200
1.1	Q	PKPKD	PKICFSD	I	30	29584	887520	3550110
1.1	Q	PKPKD	PKIKASD	I	100	48933	4893300	19573200
1.1	Q	PKPKD	PKMDTAD	I	280	300000	84000000	336000000
1.1	Q	PKPKD	PKMNQAD	I	110	180000	19800000	79200000
1.1	Q	PKPKD	PKIKD30	O	100	48933	4893300	19573200
1.1	Q	PKPKD	PKIKD10	O	110	61778	6795580	27182320
1.1	Q	PKPKD	PKIKD20	O	110	123556	13591160	54364640
1.1	M	PKPAL	PKIAGSD	I	80	3000	240000	2880000
1.1	M	PKPAL	PKMBMSD	I	80	3000	240000	2880000
1.1	M	PKPAL	PKIABAR	I	80	1	80	960
1.1	M	PKPAL	PKIAL10	O	80	3000	240000	2880000
1.1	M	PKPAL	PKIAL20	O	140	100	14000	168000
1.1	Q	PKPKT	PKIKHSD	I	100	25000	2500000	10000000
1.1	Q	PKPKT	PKIKKSD	I	40	4587	183480	733920
1.1	Q	PKPKT	PKIKNSD	I	410	40000	16400000	65600000

FUNC #	F Q	PROGRAM ID	FILE ID	I/O	REC SIZE	RECORD VOLUME	PERIOD TOTAL	ANNUALIZED TOTAL
* FUNCTIONAL DESCRIPTION ---> CREATE ORG-TMS FINAL FUEL FACTOR								
9.7	A	PJPYN	PJIYMA0	I	30	400	12000	12000
9.7	A	PJPYN	PJIYNA0	O	30	300	9000	9000
9.7	A	PJPYN	PJIYNB0	O	132	0	0	0
** SUBTOTAL **								21000
* FUNCTIONAL DESCRIPTION ---> CREATE TMS FACTOR TRANSACTIONS FILE								
9.8	A	PJPYR	PJMA3E0	I	50	100	5000	5000
9.8	A	PJPYR	PJIYNA0	I	30	300	9000	9000
9.8	A	PJPYR	PJIYRB0	O	30	150	4500	4500
9.8	A	PJPYR	PJIYRA0	O	132	0	0	0
** SUBTOTAL **								18500
* FUNCTIONAL DESCRIPTION ---> CREATE NEW UNIT TMS FACTOR TBL FILE								
9.9	A	PJPYU	PJIY5A0	I	30	150	4500	4500
9.9	A	PJPYU	PJMA2B0	I	30	750	22500	22500
9.9	A	PJPYU	PJIYU10	O	30	700	21000	21000
** SUBTOTAL **								48000
* FUNCTIONAL DESCRIPTION ---> BUILD DENOMS & COMPUTE FACTORS BY SRAN								
9.10	A	PJPBY	PJIAYA0	I	70	400000	28000000	28000000
9.10	A	PJPBY	PJIBYA0	O	20	250	5000	5000
9.10	A	PJPBY	PJMBYB0	O	20	5000	100000	100000
** SUBTOTAL **								28105000
* FUNCTIONAL DESCRIPTION ---> CREATE SUMMED ORGANIZATION RPM FACTORS								
9.11	A	PJPEY	PJICYA0	I	20	4000	80000	80000
9.11	A	PJPEY	PJMA3E0	I	50	1100	55000	55000
9.11	A	PJPEY	PJMA3E0	I	0	50	0	0
** SUBTOTAL **								135000
** TOTAL **								608242966

FUNC #	F Q	PROGRAM ID	FILE ID	I/O	REC SIZE	RECORD VOLUME	PERIOD TOTAL	ANNUALIZED TOTAL
* FUNCTIONAL DESCRIPTION ---> SEG FUEL/NONFUEL CONSUMING ITEMS BY FSC								
9.2	A	PJPYC	PJMY2A0	I	70	400000	28000000	28000000
9.2	A	PJPYC	PJMFLRT	I	20	150	3000	3000
9.2	A	PJPYC	PJJYCA0	O	70	6000	420000	420000
9.2	A	PJPYC	PJJYCB0	O	70	400000	28000000	28000000
** SUBTOTAL **								56423000
* FUNCTIONAL DESCRIPTION ---> SEP FUEL/NONFUEL-COMP FUEL COMSUMP								
9.3	A	PJPYF	PJIYDA0	I	70	6000	420000	420000
9.3	A	PJPYF	PJIYEA0	I	20	150	3000	3000
9.3	A	PJPYF	PJMYFA0	O	70	3000	210000	210000
** SUBTOTAL **								633000
* FUNCTIONAL DESCRIPTION ---> COMPUTE FUEL RATIO FACTOR								
9.4	A	PJPYH	PJIYGA0	I	70	3000	210000	210000
9.4	A	PJPYH	PJIYHA0	I	30	1200	36000	36000
9.4	A	PJPYH	PJIYHB0	O	70	3000	210000	210000
** SUBTOTAL **								456000
* FUNCTIONAL DESCRIPTION ---> CREATE ORG-TMS GENERATOR REQTS								
9.5	A	PJPYJ	PJMYFB0	I	70	400000	28000000	28000000
9.5	A	PJPYJ	PJMA3I0	I	40	250	10000	10000
9.5	A	PJPYJ	PJIYJB0	O	40	1800	72000	72000
9.5	A	PJPYL	PJIYJA0	O	132	0	0	0
** SUBTOTAL **								28082000
* FUNCTIONAL DESCRIPTION ---> CREATE ORG-TMS RAW FUEL FACTOR								
9.6	A	PJPYL	PJIYKA0	I	40	1800	72000	72000
9.6	A	PJPYL	PJIYHB0	I	70	3000	210000	210000
9.6	A	PJPYL	PJIYLA0	O	132	1400	184800	184800
9.6	A	PJPYL	PJIYLB0	O	30	400	12000	12000
** SUBTOTAL **								478800

FUNC #	F Q	PROGRAM ID	FILE ID	I/O	REC SIZE	RECORD VOLUME	PERIOD TOTAL	ANNUALIZED TOTAL
* FUNCTIONAL DESCRIPTION ---> SELECT O&S FILES								
8.3	A	PJPHC	PJMB3A0	I/O	50	20000	1000000	1000000
8.3	A	PJPHC	PJMC1B0	I/O	40	400000	16000000	16000000
8.3	A	PJPHC	PJMC5A0	I/O	100	10000	1000000	1000000
8.3	A	PJPHC	PJME1A0	I/O	50	5000	250000	250000
8.3	A	PJPHC	PJMF2A0	I/O	230	1000	230000	230000
8.3	A	PJPHC	PJM62A0	I/O	100	10000	1000000	1000000
8.3	A	PJPHC	PJMH3C0	I/O	80	1100	88000	88000
8.3	A	PJPHC	PJMC5B0	I/O	40	1000	40000	40000
8.3	A	PJPHC	PJMCVA0	I/O	80	2500	200000	200000
8.3	A	PJPHC	PJMC2B0	I/O	40	20	800	800
8.3	A	PJPHC	PJIHCL0	O	132	0	0	0
** SUBTOTAL **								19808800
* FUNCTIONAL DESCRIPTION ---> SELECT MAINTENANCE FILES								
8.4	A	PJPHD	PJMXJA0	I/O	90	1600	144000	144000
8.4	A	PJPHD	PJMXKA0	I/O	110	24000	2640000	2640000
8.4	A	PJPHD	PJMXLA0	I/O	100	24000	2400000	2400000
8.4	A	PJPHD	PJMXMA0	I/O	100	1000	100000	100000
8.4	A	PJPHD	PJMXNA0	I/O	80	400	32000	32000
8.4	A	PJPHD	PJMXPA0	I/O	20	100	2000	2000
8.4	A	PJPHD	PJIHD60	O	132	0	0	0
** SUBTOTAL **								5318000
* FUNCTIONAL DESCRIPTION ---> COMPUTE FUEL FACTORS								
9.0	A	VARIOUS	VARIOUS		0	0	0	0
** SUBTOTAL **								0
* FUNCTIONAL DESCRIPTION ---> CREATE FUEL INFORMATION FILE								
9.1	A	PJPFA	PJMFLRT	I	20	100	2000	2000
9.1	A	PJPFA	PJIFRIN	I	20	150	3000	3000
9.1	A	PJPFA	PJIFROT	O	20	10	200	200
9.1	A	PJPFA	PJIFLST	O	132	150	19800	19800
9.1	A	PJPFA	PJIMPRT	O	132	150	19800	19800
** SUBTOTAL **								44800

FUNC #	F Q	PROGRAM ID	FILE ID	I/O	REC SIZE	RECORD VOLUME	PERIOD TOTAL	ANNUALIZED TOTAL
* FUNCTIONAL DESCRIPTION ---> PRODUCE AVAILABILITY MATRIX								
7.5	A	PJPDB	PJIDAA0	I	60	1700	102000	102000
7.5	A	PJPDB	PJID8B0	O	30	400	12000	12000
7.5	A	PJPDB	PJIDBA0	O	132	1700	224400	224400
** SUBTOTAL **								338400
* FUNCTIONAL DESCRIPTION ---> HISTORY EXTRACT								
8.0	A	VARIOUS	VARIOUS		0	0	0	0
** SUBTOTAL **								0
* FUNCTIONAL DESCRIPTION ---> EDIT/BUILD EXTRACT								
8.1	A	PJPHA	PJHX001	I	80	1	80	80
8.1	A	PJPHA	PJIHAA0	O	80	1	80	80
8.1	A	PJPHA	PJIHAB0	O	80	1	80	80
8.1	A	PJPHA	PJIHAC0	O	0	80	0	0
8.1	A	PJPHA	PJIHAD0	O	132	1	132	132
** SUBTOTAL **								372
* FUNCTIONAL DESCRIPTION ---> SELECT TABLE FILES								
8.2	A	PJPHB	PJIHAA0	I	80	1	80	80
8.2	A	PJPHB	PJMA2A0	I/O	100	1700	170000	170000
8.2	A	PJPHB	PJMA2B0	I/O	30	700	21000	21000
8.2	A	PJPHB	PJMA2C0	I/O	50	600	30000	30000
8.2	A	PJPHB	PJMA2D0	I/O	20	300	6000	6000
8.2	A	PJPHB	PJMA3E0	I/O	50	1500	75000	75000
8.2	A	PJPHB	PJMA3F0	I/O	20	10	200	200
8.2	A	PJPHB	PJMA3G0	I/O	10	100	1000	1000
8.2	A	PJPHB	PJMA3H0	I/O	20	300	6000	6000
8.2	A	PJPHB	PJMA3I0	I/O	40	250	10000	10000
8.2	A	PJPHB	PJIHBI0	O	132	0	0	0
** SUBTOTAL **								319280

FUNC #	F Q	PROGRAM ID	FILE ID	I/O	REC SIZE	RECORD VOLUME	PERIOD TOTAL	ANNUALIZED TOTAL
* FUNCTIONAL DESCRIPTION ---> HISTORICAL COST TREND								
6.11	A	PJPRC	PJMRBA0	I	160	1500	240000	240000
6.11	A	PJPRC	PJIRCA0	O	132	1500	198000	198000
** SUBTOTAL **								438000
* FUNCTIONAL DESCRIPTION ---> DATA AVAILABILITY								
7.0	A	VARIOUS	VARIOUS		0	0	0	0
** SUBTOTAL **								0
* FUNCTIONAL DESCRIPTION ---> BUILD AVAILABILITY FILE								
7.1	A	PJPD5	PJMA2A0	I	100	1700	170000	170000
7.1	A	PJPD5	PJMM2A0	I	70	35000	2450000	2450000
7.1	A	PJPD5	PJID5A0	O	60	1700	102000	102000
** SUBTOTAL **								2722000
* FUNCTIONAL DESCRIPTION ---> UPDATE AVAIL FILE WITH WEIGHT FILE								
7.2	A	PJPD7	PJID6A0	I	60	1700	102000	102000
7.2	A	PJPD7	PJMQ1A0	I	20	255000	5100000	5100000
7.2	A	PJPD7	PJID7A0	O	60	1700	102000	102000
** SUBTOTAL **								5304000
* FUNCTIONAL DESCRIPTION ---> UPDATE AVAIL FILE WITH D039 DATA								
7.3	A	PJPD8	PJID7A0	I	60	1700	102000	102000
7.3	A	PJPD8	PJMY2B0	I	80	2000	160000	160000
7.3	A	PJPD8	PJID8A0	O	60	1700	102000	102000
7.3	A	PJPD8	PJID8B0	O	30	400	12000	12000
** SUBTOTAL **								376000
* FUNCTIONAL DESCRIPTION ---> UPDATE AVAIL FILE WITH D041 DATA								
7.4	A	PJPDA	PJID8A0	I	60	1700	102000	102000
7.4	A	PJPDA	PJID9A0	I	70	22000	1540000	1540000
7.4	A	PJPDA	PJIDAA0	O	60	1700	102000	102000
** SUBTOTAL **								1744000

FUNC #	F Q	PROGRAM ID	FILE ID	I/O	REC SIZE	RECORD VOLUME	PERIOD TOTAL	ANNUALIZED TOTAL
* FUNCTIONAL DESCRIPTION ---> RANK BY % CNHG NORM COST FROM PRE-YR								
6.6	A	PJPR6	PJIR5A0	I	160	1500	240000	240000
6.6	A	PJPR6	PJIR1A0	I	160	1500	240000	240000
6.6	A	PJPR6	PJIR6A0	O	160	1500	240000	240000
6.6	A	PJPR6	PJIR6B0	O	132	1500	198000	198000
** SUBTOTAL **								918000
* FUNCTIONAL DESCRIPTION ---> RANK BY % CNHG FORCE LOG COST FROM P-YR								
6.7	A	PJPR7	PJIR6A0	I	160	1500	240000	240000
6.7	A	PJPR7	PJIR1A0	I	160	1500	240000	240000
6.7	A	PJPR7	PJIR7A0	O	160	1500	240000	240000
6.7	A	PJPR7	PJIR7B0	O	132	1500	198000	198000
** SUBTOTAL **								918000
* FUNCTIONAL DESCRIPTION ---> RANK BY % CHNG NORM LOG COST FROM PRE-YR								
6.8	A	PJPR8	PJIR7A0	I	160	1500	240000	240000
6.8	A	PJPR8	PJIR1A0	I	160	1500	240000	240000
6.8	A	PJPR8	PJIR8A0	O	160	1500	240000	240000
6.8	A	PJPR8	PJIR8B0	O	160	1500	240000	240000
** SUBTOTAL **								960000
* FUNCTIONAL DESCRIPTION ---> RANK BY NORM O&S COST/ACQ PRICE RATIO								
6.9	A	PJPR9	PJIR8A0	I	160	1500	240000	240000
6.9	A	PJPR9	PJIR9A0	O	160	1500	240000	240000
6.9	A	PJPR9	PJIR9B0	O	132	1500	198000	198000
** SUBTOTAL **								678000
* FUNCTIONAL DESCRIPTION ---> RANK BY NORM LOG SUPP COST/ACQ PRC-RATIO								
6.10	A	PJPRA	PJIR9A0	I	160	1500	240000	240000
6.10	A	PJPRA	PJIRAA0	O	160	1500	240000	240000
6.10	A	PJPRA	PJIRAB0	O	132	1500	198000	198000
** SUBTOTAL **								678000

FUNC #	F Q	PROGRAM ID	FILE ID	I/O	REC SIZE	RECORD VOLUME	PERIOD TOTAL	ANNUALIZED TOTAL
* FUNCTIONAL DESCRIPTION ---> RANK BY FORCE O&S COST								
6.1	A	PJPR1	PJIR1C0	O	132	1500	198000	198000
6.1	A	PJPR1	PJIR1B0	O	160	1500	240000	240000
** SUBTOTAL **								1038000
* FUNCTIONAL DESCRIPTION ---> RANK BY NORMALIZED O&S COST								
6.2	A	PJPR2	PJIR1A0	I	160	1500	240000	240000
6.2	A	PJPR2	PJIR1B0	I	160	1500	240000	240000
6.2	A	PJPR2	PJIR2A0	O	160	1500	240000	240000
6.2	A	PJPR2	PJIR2B0	O	132	1500	198000	198000
** SUBTOTAL **								918000
* FUNCTIONAL DESCRIPTION ---> RANK BY FORCE LOG SUPPORT COST								
6.3	A	PJPR3	PJIR2A0	I	160	1500	240000	240000
6.3	A	PJPR3	PJIR1A0	I	160	1500	240000	240000
6.3	A	PJPR3	PJIR3A0	O	160	1500	240000	240000
6.3	A	PJPR3	PJIR3B0	O	132	1500	198000	198000
** SUBTOTAL **								918000
* FUNCTIONAL DESCRIPTION ---> RANK BY NORMALIZED LOG SUPPORT COST								
6.4	A	PJPR4	PJIR3A0	I	160	1500	240000	240000
6.4	A	PJPR4	PJIR1A0	I	160	1500	240000	240000
6.4	A	PJPR4	PJIR4A0	O	160	1500	240000	240000
6.4	A	PJPR4	PJIR4B0	O	132	1500	198000	198000
** SUBTOTAL **								918000
* FUNCTIONAL DESCRIPTION ---> RANK BY % CHNG FORCE COST FROM PRE-YR								
6.5	A	PJPR5	PJIR4A0	I	160	1500	240000	240000
6.5	A	PJPR5	PJIR1A0	I	160	1500	240000	240000
6.5	A	PJPR5	PJIR5A0	O	160	1500	240000	240000
6.5	A	PJPR5	PJIR5B0	O	132	1500	198000	198000
** SUBTOTAL **								918000

FUNC #	F Q	PROGRAM ID	FILE ID	I/O	REC SIZE	RECORD VOLUME	PERIOD TOTAL	ANNUALIZED TOTAL
* FUNCTIONAL DESCRIPTION ---> PRODUCE O&S COST REPORT								
4.2	A	PJPH3	PJMH3A0	O	132	0	0	0
** SUBTOTAL **								1650600
* FUNCTIONAL DESCRIPTION ---> PRODUCE OUTPUT PRODUCTS								
5.0	A	VARIOUS	VARIOUS		0	0	0	0
** SUBTOTAL **								0
* FUNCTIONAL DESCRIPTION ---> BUILD DEMAND PRODUCTS								
5.1	A	PJPD1	PJMXJA0	I	90	5000	450000	450000
5.1	A	PJPD1	PJMXKA0	I	110	5000	550000	550000
5.1	A	PJPD1	PJMXLA0	I	100	5000	500000	500000
5.1	A	PJPD1	PJMXMA0	I	100	5000	500000	500000
5.1	A	PJPD1	PJMXNA0	I	80	3000	240000	240000
5.1	A	PJPD1	PJMXPA0	I	20	1000	20000	20000
5.1	A	PJPD1	PJID1A0	O	132	1	132	132
5.1	A	PJPD1	PJID1B0	O	132	1	132	132
** SUBTOTAL **								2260264
* FUNCTIONAL DESCRIPTION ---> PRINT DEMAND PRODUCTS								
5.2	A	PJPD3	PJID2A0	I	132	0	0	0
5.2	A	PJPD3		O	132	0	0	0
** SUBTOTAL **								0
* FUNCTIONAL DESCRIPTION ---> PRODUCE RANKING FILES								
6.0	A	VARIOUS	VARIOUS		0	0	0	0
** SUBTOTAL **								0
* FUNCTIONAL DESCRIPTION ---> RANK BY FORCE O&S COST								
6.1	A	PJPR1	PJMH3C0	I	80	1500	120000	120000
6.1	A	PJPR1	PJMRBA0	I	160	1500	240000	240000
6.1	A	PJPR1	PJIR1A0	O	160	1500	240000	240000

FUNC #	F Q	PROGRAM ID	FILE ID	I/O	REC SIZE	RECORD VOLUME	PERIOD TOTAL	ANNUALIZED TOTAL
* FUNCTIONAL DESCRIPTION ---> BUILD TABLE8/DEPOT MAINT COST FILE								
3.10	A	PJPXH	PJIXFA0	I	110	25000	2750000	2750000
3.10	A	PJPXH	PJIXGA0	I	100	25000	2500000	2500000
3.10	A	PJPXH	PJIXEA0	I	100	100	10000	10000
3.10	A	PJPXH	PJIXHA0	O	80	1200	96000	96000
** SUBTOTAL **								5356000
* FUNCTIONAL DESCRIPTION ---> PRODUCE MAINTENANCE COST								
3.11	A	PJPXI	PJIXHA0	I	80	1200	96000	96000
3.11	A	PJPXI	PJMYEA0	I	20	100	2000	2000
3.11	A	PJPXI	PJMXIA0	O	80	1200	96000	96000
** SUBTOTAL **								194000
* FUNCTIONAL DESCRIPTION ---> COMPUTE O&S COSTS								
4.0	A	VARIOUS	VARIOUS		0	0	0	0
** SUBTOTAL **								0
* FUNCTIONAL DESCRIPTION ---> BUILD COST OUTPUT FILE								
4.1	A	PJPG1	PJME1A0	I	50	1500	75000	75000
4.1	A	PJPG1	PJMF2A0	I	230	1000	230000	230000
4.1	A	PJPG1	PJME1C0	I	30	1	30	30
4.1	A	PJPG1	PJMG1A0	O	100	10000	1000000	1000000
4.1	A	PJPG1	PJMG1B0	O	132	1000	132000	132000
4.1	A	PJPG1	PJIG1B0	O	132	1100	145200	145200
** SUBTOTAL **								1582230
* FUNCTIONAL DESCRIPTION ---> PRODUCE O&S COST REPORT								
4.2	A	PJPH3	PJMA3H0	I	20	30	600	600
4.2	A	PJPH3	PJMG1A0	I	100	10000	1000000	1000000
4.2	A	PJPH3	PJICVA0	I	80	2500	200000	200000
4.2	A	PJPH3	PJMXIA0	I	80	1200	96000	96000
4.2	A	PJPH3	PJIX5A0	I	60	1600	96000	96000
4.2	A	PJPH3	PJMA2A0	I	100	1700	170000	170000
4.2	A	PJPH3	PJMH3C0	O	80	1100	88000	88000

FUNC #	F Q	PROGRAM ID	FILE ID	I/O	REC SIZE	RECORD VOLUME	PERIOD TOTAL	ANNUALIZED TOTAL
* FUNCTIONAL DESCRIPTION ---> BUILD TABLE3-4/APP NIIN COST FILE								
3.5	A	PJPX8	PJIX6A0	I	60	1600	96000	96000
3.5	A	PJPX8	PJIX7A0	I	100	25000	2500000	2500000
3.5	A	PJPX8	PJIX8A0	O	110	25000	2750000	2750000
** SUBTOTAL **								5346000
* FUNCTIONAL DESCRIPTION ---> BUILD TABLE5/RECOV NIIN COST FILE								
3.6	A	PJPXA	PJMQ1A0	I	20	255000	5100000	5100000
3.6	A	PJPXA	PJIX9A0	I	110	25000	2750000	2750000
3.6	A	PJPXA	PJEX001	I	80	1	80	80
3.6	A	PJPXA	PJIXAA0	O	100	25000	2500000	2500000
** SUBTOTAL **								10350080
* FUNCTIONAL DESCRIPTION ---> SUMMARIZE CORRECTIVE HOURS								
3.7	A	PJPXB	PJMM2A0	I	70	25000	1750000	1750000
3.7	A	PJPXB	PJIXBA0	O	20	1000	20000	20000
** SUBTOTAL **								1770000
* FUNCTIONAL DESCRIPTION ---> BUILD TABLE6/LABOR HRS & COST FILE								
3.8	A	PJPXD	PJMB3A0	I	50	20000	1000000	1000000
3.8	A	PJPXD	PJIXBA0	I	20	1000	20000	20000
3.8	A	PJPXD	PJIX5A0	I	60	1600	96000	96000
3.8	A	PJPXD	PJIXDA0	O	90	1000	90000	90000
3.8	A	PJPXD	PJIXDB0	I	132	10	1320	1320
** SUBTOTAL **								1207320
* FUNCTIONAL DESCRIPTION ---> BUILD TABLE6-7/LABOR & MAT COST FILE								
3.9	A	PJPXE	PJIXDA0	I	90	1000	90000	90000
3.9	A	PJPXE	PJMM4A0	I	20	100	2000	2000
3.9	A	PJPXE	PJIXEA0	O	100	1000	100000	100000
** SUBTOTAL **								192000

FUNC #	F Q	PROGRAM ID	FILE ID	I/O	REC SIZE	RECORD VOLUME	PERIOD TOTAL	ANNUALIZED TOTAL
* FUNCTIONAL DESCRIPTION ---> EXTRACT REPORTABLE TMS FOR C-E DATA								
3.0	A	VARIOUS	VARIOUS		0	0	0	0
** SUBTOTAL **								0
* FUNCTIONAL DESCRIPTION ---> BUILD PAS-REAL PROP MAINT WORK FILE								
3.1	A	PJPF1	PJMA3E0	I	50	1500	75000	75000
3.1	A	PJPF1	PJMC2B0	I	40	100	4000	4000
3.1	A	PJPF1	PJIF1A0	O	20	400	8000	8000
** SUBTOTAL **								87000
* FUNCTIONAL DESCRIPTION ---> BUILD UNIT WORK FILE								
3.2	A	PJPF2	PJMA2C0	I	50	600	30000	30000
3.2	A	PJPF2	PJMA3G0	I	10	100	1000	1000
3.2	A	PJPF2	PJMB3A0	I	50	22000	1100000	1100000
3.2	A	PJPF2	PJIB3B0	I	20	2100	42000	42000
3.2	A	PJPF2	PJMC5A0	I	100	10000	1000000	1000000
3.2	A	PJPF2	PJIF4A0	I	20	400	8000	8000
3.2	A	PJPF2	PJMF2A0	O	230	1000	230000	230000
3.2	A	PJPF2	PJIF2C0	O	132	12000	1584000	1584000
** SUBTOTAL **								3995000
* FUNCTIONAL DESCRIPTION ---> BUILD TABLE1/REPORTABLE TMS FILE								
3.3	A	PJPX2	PJMA2A0	I	100	1700	170000	170000
3.3	A	PJPX2	PJMY2B0	I	80	2000	160000	160000
3.3	A	PJPX2	PJIX2A0	O	60	1600	96000	96000
3.3	A	PJPX2	PJIX2B0	O	90	1600	144000	144000
** SUBTOTAL **								570000
* FUNCTIONAL DESCRIPTION ---> AVE ANNUAL INVENTORY SUMMATION								
3.4	A	PJPX5	PJIX4A0	I	90	1600	144000	144000
3.4	A	PJPX5	PJIX5A0	O	60	1600	96000	96000
** SUBTOTAL **								240000

FUNC #	F Q	PROGRAM ID	FILE ID	I/O	REC SIZE	RECORD VOLUME	PERIOD TOTAL	ANNUALIZED TOTAL
* FUNCTIONAL DESCRIPTION ---> BUILD NON C-E APPLICATION FILE								
2.16	A	PJPY7	PJIY6A0	I	40	45000	1800000	1800000
2.16	A	PJPY7	PJMY2C0	I	40	100000	4000000	4000000
2.16	A	PJPY7	PJIY7A0	O	0	60	0	0
** SUBTOTAL **								5800000
* FUNCTIONAL DESCRIPTION ---> RECOVERABLE ALLOCATION FACTOR COMP								
2.17	A	PJPY9	PJIY6A0	I	60	22000	1320000	1320000
2.17	A	PJPY9	PJIY8A0	I	60	30000	1800000	1800000
2.17	A	PJPY9	PJIY9A0	O	50	22000	1100000	1100000
** SUBTOTAL **								4220000
* FUNCTIONAL DESCRIPTION ---> BUILD RECOVERABLE DATA BASE								
2.18	A	PJPYA	PJIY9A0	I	50	22000	1100000	1100000
2.18	A	PJPYA	PJIY3B0	I	30	60000	1800000	1800000
2.18	A	PJPYA	PJMYAA0	O	70	22000	1540000	1540000
** SUBTOTAL **								4440000
* FUNCTIONAL DESCRIPTION ---> BUILD DEPOT COSTS								
2.19	A	PJPYB	PJMYAA0	I	70	22000	1540000	1540000
2.19	A	PJPYB	AHIQTB0	I	410	50000	20500000	20500000
2.19	A	PJPYB	PJMYBA0	O	100	22000	2200000	2200000
** SUBTOTAL **								24240000
* FUNCTIONAL DESCRIPTION ---> BUILD MOBILE DEPOT MAINT FILE								
2.20	A	PJPYE	FRBT1UY	I	110	200	22000	22000
2.20	A	PJPYE	PJMA2A0	I	100	1700	170000	170000
2.20	A	PJPYE	PJMYEA0	O	132	50	6600	6600
2.20	A	PJPYE	PJIYEB0	O	132	10	1320	1320
** SUBTOTAL **								199920

FUNC #	F Q	PROGRAM ID	FILE ID	I/O	REC SIZE	RECORD VOLUME	PERIOD TOTAL	ANNUALIZED TOTAL
* FUNCTIONAL DESCRIPTION ---> BUILD INVENTORY DATA BASE								
2.11	A	PJPY2	PJMY2C0	O	40	100000	4000000	4000000
** SUBTOTAL **								
								91286800
* FUNCTIONAL DESCRIPTION ---> SELECT C-E FED STOCK CLASS								
2.12	A	PJPY3	PJIY0A0	I	50	250000	12500000	12500000
2.12	A	PJPY3	PJY2001	I	80	2	160	160
2.12	A	PJPY3	PJJY3B0	O	30	60000	1800000	1800000
2.12	A	PJPY3	PJIY3A0	O	40	70000	2800000	2800000
** SUBTOTAL **								
								17100160
* FUNCTIONAL DESCRIPTION ---> LEVEL OF INDENTURE REMOVAL								
2.13	A	PJPY4	PJMY2B0	I	80	1600	128000	128000
2.13	A	PJPY4	PJIYFA0	I	40	70000	2800000	2800000
2.13	A	PJPY4	PJIY4A1	O	40	30000	1200000	1200000
2.13	A	PJPY4	PJIY4A2	O	40	3200	128000	128000
2.13	A	PJPY4	PJIY4A3	O	40	400	16000	16000
2.13	A	PJPY4	PJIY4A4	O	40	50	2000	2000
2.13	A	PJPY4	PJIY4B0	O	40	43000	1720000	1720000
** SUBTOTAL **								
								5994000
* FUNCTIONAL DESCRIPTION ---> ELIMINATE DUP D041A RECORDS								
2.14	A	PJPYX	A6308U	I	50	400000	20000000	20000000
2.14	A	PJPYX	PJIYXC0	O	50	250000	12500000	12500000
2.14	A	PJPYX	PJIYXB0	O	132	0	0	0
** SUBTOTAL **								
								32500000
* FUNCTIONAL DESCRIPTION ---> RAF SUMMATION								
2.15	A	PJPY6	PJIY5A0	I	60	31000	1860000	1860000
2.15	A	PJPY6	PJIY6A0	O	60	22000	1320000	1320000
** SUBTOTAL **								
								3180000

FUNC #	F Q	PROGRAM ID	FILE ID	I/O	REC SIZE	RECORD VOLUME	PERIOD TOTAL	ANNUALIZED TOTAL
* FUNCTIONAL DESCRIPTION ---> SELECT COST & MAINTENANCE DATA								
1.1	Q	PKPKT	PKIJR30	I	60	26157	1569420	6277680
1.1	Q	PKPKT	PKIJT10	I	100	96995	9699500	38798000
1.1	Q	PKPKT	PKMBMS0	I	80	3000	240000	960000
1.1	Q	PKPKT	PKIKT20	O	150	7104	1065600	4262400
1.1	Q	PKPKT	PKIKT10	O	130	7500	975000	3900000
1.1	Q	PKPKT	PKIKT30	O	60	48933	2935980	11743920
1.1	M	PKPGP	PKIGCS0	I	50	50000	2500000	30000000
1.1	M	PKPGP	PKIGFS0	I	100	1200000	120000000	1440000000
1.1	M	PKPGP	PKIGIS0	I	110	300000	33000000	396000000
1.1	M	PKPGP	PKMBMS0	I	80	3000	240000	2880000
1.1	M	PKPGP	PKIGP10	O	60	113682	6820920	81851040
1.1	M	PKPGP	PKIGP20	O	50	1000	50000	600000
1.1	M	PKPGP	PKIGP30	O	110	1000000	110000000	1320000000
1.1	M	PKPGR	PKIQ1S0	I	60	35000	2100000	25200000
1.1	M	PKPGR	PKIQ2S0	I	50	1000	50000	600000
1.1	M	PKPGR	PKIQ3S0	I	110	1000000	110000000	1320000000
1.1	M	PKPGR	PKIGR10	O	60	80000	4800000	57600000
1.1	M	PKPGR	PKIGR20	O	50	100	5000	60000
1.1	M	PKPGR	PKIGR30	O	130	750000	97500000	1170000000
1.1	Q	PKPHP	PKIGR30	I	130	750000	97500000	390000000
1.1	Q	PKPHP	PKICFS0	I	30	29584	887520	3550080
1.1	Q	PKPHP	PKMDTA0	I	280	300000	84000000	336000000
1.1	Q	PKPHP	PKIHP10	O	110	5260	578600	2314400
1.1	Q	PKPHP	PKIHP20	O	110	6585	724350	2897400
1.1	Q	PKPHP	PKIHP30	O	110	6255	688050	2752200
1.1	M	PKPGA	PKIA6U0	I	80	107000	8560000	102720000
1.1	M	PKPGA	PKMBMS0	I	80	3000	240000	2880000
1.1	M	PKPGA	PKIGA10	O	60	79326	4759560	57114720
1.1	Q	PKPHN	PKIHLS0	I	60	79326	4759560	19038240
1.1	Q	PKPHN	PKIABAR	I	80	1	80	320
1.1	Q	PKPHN	PKMHNA0	O	50	75000	3750000	15000000
1.1	Q	PKPIE	PKIFOAU	I	50	800	40000	160000
1.1	Q	PKPIE	PKMBMS0	I	80	3000	240000	960000
1.1	Q	PKPIE	PKIIE10	O	50	800	40000	160000
1.1	Q	PKPIN	PKIF063	I	50	125000	6250000	25000000
1.1	Q	PKPIN	PKMBMS0	I	80	3000	240000	960000
1.1	Q	PKPIN	PKIIN10	O	50	100	5000	20000
1.1	Q	PKPIN	PKIIN20	O	70	4081	285670	1142680
1.1	Q	PKPIV	PKICFS0	I	30	29584	887520	3550080
1.1	Q	PKPIV	PKIIRS0	I	70	9931	695170	2780680
1.1	Q	PKPIV	PKIIV10	O	70	4527	316890	1267560

FUNC #	F Q	PROGRAM ID	FILE ID	I/O	REC SIZE	RECORD VOLUME	PERIOD TOTAL	ANNUALIZED TOTAL
* FUNCTIONAL DESCRIPTION ---> SELECT COST & MAINTENANCE DATA								
1.1	Q	PKPIV	PKIIV20	O	70	9418	659260	2637040
** SUBTOTAL **								8080519030
* FUNCTIONAL DESCRIPTION ---> COMPUTE QUARTERLY COSTS								
1.2	Q	PKPLJ	PKIKGSO	I	100	48933	4893300	19573200
1.2	Q	PKPLJ	PKIKT20	I	150	7104	1065600	4262400
1.2	Q	PKPLJ	PKMBMSO	I	80	3000	240000	960000
1.2	Q	PKPLJ	PKIABAR	I	80	1	80	320
1.2	Q	PKPLJ	PKMLJ10	O	270	3000	810000	3240000
1.2	Q	PKPLJ	PKMLJ20	O	220	51000	11220000	44880000
1.2	Q	PKPLJ	PKMLJ30	O	300	60000	18000000	72000000
1.2	Q	PKPLN	PKILCSO	I	40	24465	978600	3914400
1.2	Q	PKPLN	PKILG10	I	80	2000	160000	640000
1.2	Q	PKPLN	PKIHP20	I	110	6255	688050	2752200
1.2	Q	PKPLN	PKIIASO	I	20	500	10000	40000
1.2	Q	PKPLN	PKIHTSO	I	110	6255	688050	2752200
1.2	Q	PKPLN	PKMBMSO	I	80	3000	240000	960000
1.2	Q	PKPLN	PKILESO	I	60	17288	1037280	4149120
1.2	Q	PKPLN	PKMHNAO	I	50	75000	3750000	15000000
1.2	Q	PKPLN	PKMDTAO	I	280	300000	84000000	336000000
1.2	Q	PKPLN	PKMLN10	O	340	400000	136000000	544000000
1.2	Q	PKPLN	PKMLN20	O	180	1000	180000	720000
1.2	Q	PKPLG	PKILG10	I	80	2000	160000	640000
1.2	Q	PKPLG	PKIIJSO	I	50	34000	1700000	6800000
1.2	Q	PKPLG	PKIGR10	I	60	80000	4800000	19200000
1.2	Q	PKPLG	PKMBMSO	I	80	3000	240000	960000
1.2	Q	PKPLG	PKILG10	O	80	2000	160000	640000
1.2	Q	PKPLQ	PKIIWSO	I	70	9418	659260	2637040
1.2	Q	PKPLQ	PKIIN10	I	50	50	2500	10000
1.2	Q	PKPLQ	PKILPSO	I	50	200	10000	40000
1.2	Q	PKPLQ	PKILDSO	I	130	50	6500	26000
1.2	Q	PKPLQ	PKMBMSO	I	80	3000	240000	960000
1.2	Q	PKPLQ	PKIABAR	I	80	1	80	320
1.2	Q	PKPLQ	PKMLQ10	O	240	300	72000	288000
1.2	Q	PKPLQ	PKMLQ20	O	120	10000	1200000	4800000
** SUBTOTAL **								1092845200

FUNC #	F Q	PROGRAM ID	FILE ID	I/O	REC SIZE	RECORD VOLUME	PERIOD TOTAL	ANNUALIZED TOTAL
* FUNCTIONAL DESCRIPTION ---> COMPUTE RELIABILITY & MAINTENANCE FACTOR								
1.3	Q	PKPLN	PKILCSO	I	40	24465	978600	3914400
1.3	Q	PKPLN	PKILG10	I	80	2000	160000	640000
1.3	Q	PKPLN	PKIHP20	I	110	6585	724350	2897400
1.3	Q	PKPLN	PKIIASO	I	20	500	10000	40000
1.3	Q	PKPLN	PKIHTSO	I	110	6255	688050	2752200
1.3	Q	PKPLN	PKMBMSO	I	80	3000	240000	960000
1.3	Q	PKPLN	PKILESO	I	60	17288	1037280	4149120
1.3	Q	PKPLN	PKMHNAO	I	50	75000	3750000	15000000
1.3	Q	PKPLN	PKMDTAO	I	280	300000	84000000	336000000
1.3	Q	PKPLN	PKMLN10	O	340	400000	136000000	544000000
1.3	Q	PKPLN	PKMLN20	O	180	1000	180000	720000
1.3	Q	PKPNC	PKMLN10	I	340	400000	136000000	544000000
1.3	Q	PKPNC	PKILPSO	I	50	100	5000	20000
1.3	Q	PKPNC	PKILLSO	I	270	3000	810000	3240000
1.3	Q	PKPNC	PKMLQ20	I	120	10000	1200000	4800000
1.3	Q	PKPNC	PKMNBSO	I	70	9000	630000	2520000
1.3	Q	PKPNC	PKMDTAO	I	280	300000	84000000	336000000
1.3	Q	PKPNC	PKILKSO	I	300	60000	18000000	72000000
1.3	Q	PKPNC	PKMNCAO	O	280	400000	112000000	448000000
1.3	Q	PKPNC	PKMNCBO	O	280	200000	56000000	224000000
1.3	Q	PKPNC	PKMNCCO	O	130	10000	1300000	5200000
1.3	Q	PKPNC	PKMNCDO	O	163	200000	32600000	130400000
1.3	Q	PKPNC	PKMNCEO	O	70	180000	12600000	50400000
** SUBTOTAL **								2731653120
* FUNCTIONAL DESCRIPTION ---> MAINTAIN DATA BASE								
2.0	M	VARIOUS			0	0	0	0
** SUBTOTAL **								0
* FUNCTIONAL DESCRIPTION ---> GET FILE MAINTENANCE								
2.1	M	PKPDH	PKIDBSO	I	110	67600	7436000	89232000
2.1	M	PKPDH	PKIDEAO	I	30	800732	24021960	288263520
2.1	M	PKPDH	PKICRAO	I	350	2960	1036000	12432000
2.1	M	PKPDH	PKIDHBO	O	80	6000	480000	5760000
2.1	M	PKPDH	PKIDHCO	O	80	6000	480000	5760000
2.1	M	PKPDH	PKIBRAO	O	140	22863	3200820	38409840
2.1	M	PKPDH	PKIDHAO	O	350	6000	2100000	25200000

FUNC #	F Q	PROGRAM ID	FILE ID	I/O	REC SIZE	RECORD VOLUME	PERIOD TOTAL	ANNUALIZED TOTAL
* FUNCTIONAL DESCRIPTION ---> GET FILE MAINTENANCE								
2.1	M	PKPDH	PKIDHDO	O	6000	1000	6000000	72000000
2.1	M	PKPAV	PKIAQSO	I	80	9553	764240	9170880
2.1	M	PKPAV	PKIAV10	O	80	1038	83040	996480
2.1	M	PKPAV	PKIAV20	O	80	10560	844800	10137600
2.1	M	PKPAL	PKIAGSO	I	80	3000	240000	2880000
2.1	M	PKPAL	PKMBMSO	I	80	3000	240000	2880000
2.1	M	PKPAL	PKIABAR	I	80	1	80	960
2.1	M	PKPAL	PKIAL10	O	80	3000	240000	2880000
2.1	M	PKPAL	PKIAL20	O	140	100	14000	168000
2.1	M	PKPCC	PKIBTSO	I	180	57731	10391580	124698960
2.1	M	PKPCC	PKMDTAO	I	280	300000	84000000	1008000000
2.1	M	PKPCC	PKICFSO	I	30	31141	934230	11210760
2.1	M	PKPCC	PKMBMSO	I	80	3000	240000	2880000
2.1	M	PKPCC	PKICCAO	O	30	31141	934230	11210760
2.1	M	PKPCC	PKIBRAO	O	140	22863	3200820	38409840
2.1	M	PKPCC	PKICCBO	O	350	2960	1036000	12432000
2.1	M	PKPCC	PKIBRCO	O	180	100	18000	216000
2.1	M	PKPDT	PKIDRSO	I	320	16634	5322880	63874560
2.1	M	PKPDT	PKMDTAO	I	280	300000	84000000	1008000000
2.1	M	PKPDT	PKMDVBO	I	280	300000	84000000	1008000000
2.1	M	PKPDT	PKMDUCO	I	280	300000	84000000	1008000000
2.1	M	PKPDT	PKMDTAO	O	280	300000	84000000	1008000000
2.1	M	PKPDT	PKMDVBO	O	280	300000	84000000	1008000000
2.1	M	PKPDT	PKMDUCO	O	280	300000	84000000	1008000000
2.1	M	PKPDT	PKIBRAO	O	140	22863	3200820	38409840
2.1	M	PKPDT	PKIDHBO	O	80	6000	480000	5760000
2.1	M	PKPCM	PKMDVBO	I	280	300000	84000000	1008000000
2.1	M	PKPCM	PKICJSO	I	350	2960	1036000	12432000
2.1	M	PKPCM	PKICHSO	I	180	100	18000	216000
2.1	M	PKPCM	PKICMAO	O	350	2960	1036000	12432000
2.1	M	PKPCM	PKIBRAO	O	140	22863	3200820	38409840
2.1	M	PKPCT	D046.TAPE	I	80	25000	2000000	24000000
2.1	M	PKPCT	PKICTAO	O	110	67600	7436000	89232000
2.1	M	PKPDK	PKIDJSO	I	6000	1000	6000000	72000000
2.1	M	PKPDK	PKMDKAO	I	80	30000	2400000	28800000
2.1	M	PKPDK	PKMDKAO	O	80	30000	2400000	28800000
2.1	M	PKPDK	PKIDKBO	O	350	6000	2100000	25200000
2.1	M	PKPDK	PKIDHBO	O	80	6000	480000	5760000
2.1	M	PKPBR	PKIBPAO	I	80	2997	239760	2877120
2.1	M	PKPBR	MOI34BO	I	80	2416	193280	2319360
2.1	M	PKPBR	PKIBNAO	I	0	0	0	0

FUNC #	F Q	PROGRAM ID	FILE ID	I/O	REC SIZE	RECORD VOLUME	PERIOD TOTAL	ANNUALIZED TOTAL
* FUNCTIONAL DESCRIPTION ---> GET FILE MAINTENANCE								
2.1	M	PKPBR	D220	I	120	0	0	0
2.1	M	PKPBR	PKMBMSO	I	80	3000	240000	2880000
2.1	M	PKPBR	D194	I	0	0	0	0
2.1	M	PKPBR	PKIBRAO	O	140	22863	3200820	38409840
2.1	M	PKPBR	PKIBRBO	O	180	57731	10391580	124698960
2.1	M	PKPBR	PKIBRCO	O	180	100	18000	216000
** SUBTOTAL **								9447957120
* FUNCTIONAL DESCRIPTION ---> FILE MAINTAIN DATA BASES								
2.2	Q	PKPKD	PKICFSO	I	30	29584	887520	3550080
2.2	Q	PKPKD	PKIKASO	I	100	48933	4893300	19573200
2.2	Q	PKPKD	PKMDTAO	I	280	300000	84000000	336000000
2.2	Q	PKPKD	PKMNQAO	I	110	180000	19800000	79200000
2.2	Q	PKPKD	PKIKD30	O	100	48933	4893300	19573200
2.2	Q	PKPKD	PKIKD10	O	110	125000	13750000	55000000
2.2	Q	PKPKD	PKIKD20	O	110	125000	13750000	55000000
2.2	Q	PKPJR	PKIDHCO	I	80	6000	480000	1920000
2.2	Q	PKPJR	PKIJNSO	I	100	39418	3941800	15767200
2.2	Q	PKPJR	PKIKT30	I	60	48933	2935980	11743920
2.2	Q	PKPJR	PKIJR10	O	60	28862	1731720	6926880
2.2	Q	PKPJR	PKIJR30	O	60	21575	1294500	5178000
2.2	Q	PKPJR	PKIJR20	O	100	96995	9699500	38798000
2.2	M	PKPDT	PKIDRSO	I	320	16634	5322880	63874560
2.2	M	PKPDT	PKMDTAO	I	280	300000	84000000	1008000000
2.2	M	PKPDT	PKMDVBO	I	280	300000	84000000	1008000000
2.2	M	PKPDT	PKMDUCO	I	280	300000	84000000	1008000000
2.2	M	PKPDT	PKMDTAO	O	280	300000	84000000	1008000000
2.2	M	PKPDT	PKMDVBO	O	280	300000	84000000	1008000000
2.2	M	PKPDT	PKMDUCO	O	280	300000	84000000	1008000000
2.2	M	PKPDT	PKIBRAO	O	140	22863	3200820	38409840
2.2	M	PKPDT	PKIDHBO	O	80	6000	480000	5760000
2.2	M	PKPDH	PKIDBAO	I	110	67600	7436000	89232000
2.2	M	PKPDH	PKIDEAO	I	30	60000	1800000	21600000
2.2	M	PKPDH	PKICRAO	I	350	2960	1036000	12432000
2.2	M	PKPDH	PKIDHBO	O	80	6000	480000	5760000
2.2	M	PKPDH	PKIDHCO	O	80	6000	480000	5760000
2.2	M	PKPDH	PKIBRAO	O	140	22863	3200820	38409840
2.2	M	PKPDH	PKIDHAO	O	350	22863	8002050	96024600
2.2	M	PKPDH	PKIDHDO	O	40	6000	240000	2880000

FUNC #	F Q	PROGRAM ID	FILE ID	I/O	REC SIZE	RECORD VOLUME	PERIOD TOTAL	ANNUALIZED TOTAL
* FUNCTIONAL DESCRIPTION ---> FILE MAINTAIN DATA BASES								
2.2	M	PKPBH	PKIAL10	I	80	3000	240000	2880000
2.2	M	PKPBH	PKIAZSO	I	80	560	44800	537600
2.2	M	PKPBH	PKIBH10	O	80	0	0	0
2.2	M	PKPAL	PKIA6SO	I	80	3000	240000	2880000
2.2	M	PKPAL	PKMBMSO	I	80	3000	240000	2880000
2.2	M	PKPAL	PKIABAR	I	80	1	80	960
2.2	M	PKPAL	PKIAL10	O	80	3000	240000	2880000
2.2	M	PKPAL	PKIAL20	O	140	100	14000	168000
2.2	M	PKPAV	PKIAQSO	I	80	9553	764240	9170880
2.2	M	PKPAV	PKIAV10	O	80	1038	83040	996480
2.2	M	PKPAV	PKIAV20	O	80	560	44800	537600
2.2	M	PKPDN	PKIDHAO	I	350	6000	2100000	25200000
2.2	M	PKPDN	PKIDKBO	I	350	6000	2100000	25200000
2.2	M	PKPDN	PKIDNAO	O	320	11634	3722880	44674560
2.2	M	PKPDN	PKIBRAO	O	140	22863	3200820	38409840
2.2	M	PKPCV	PKMDUCO	I	280	300000	84000000	1008000000
2.2	M	PKPCV	PKICVAO	O	20	72728	1454560	17454720
2.2	M	PKPCZ	PKICXSO	I	20	72728	1454560	17454720
2.2	M	PKPCZ	PKICUSO	I	110	67600	7436000	89232000
2.2	M	PKPCZ	PKICZAO	O	110	67600	7436000	89232000
** SUBTOTAL **								8454162680
* FUNCTIONAL DESCRIPTION ---> UPDATE COST & MAINTENANCE DATA								
2.3	Q	PKPNA	PKMLN20	I	180	1000	180000	720000
2.3	Q	PKPNA	PKMLQ10	I	240	300	72000	288000
2.3	Q	PKPNA	PKMHNAO	I	50	75000	3750000	15000000
2.3	Q	PKPNA	PKILKSO	I	300	57029	17108700	68434800
2.3	Q	PKPNA	PKILLSO	I	270	2815	760050	3040200
2.3	Q	PKPNA	PKMNA10	O	440	750	330000	1320000
2.3	Q	PKPNA	PKINA20	O	70	9000	630000	2520000
2.3	Q	PKPNC	PKMLN10	I	340	400000	136000000	544000000
2.3	Q	PKPNC	PKILPSO	I	50	100	5000	20000
2.3	Q	PKPNC	PKILLSO	I	270	2815	760050	3040200
2.3	Q	PKPNC	PKMLQ20	I	120	10000	1200000	4800000
2.3	Q	PKPNC	PKMNBSO	I	70	9000	630000	2520000
2.3	Q	PKPNC	PKMDTAO	I	280	300000	84000000	336000000
2.3	Q	PKPNC	PKILKSO	I	300	60000	18000000	72000000
2.3	Q	PKPNC	PKMNCAO	O	280	400000	112000000	448000000
2.3	Q	PKPNC	PKMNCBO	O	280	200000	56000000	224000000

FUNC #	F Q	PROGRAM ID	FILE ID	I/O	REC SIZE	RECORD VOLUME	PERIOD TOTAL	ANNUALIZED TOTAL
* FUNCTIONAL DESCRIPTION ---> UPDATE COST & MAINTENANCE DATA								
2.3	Q	PKPNC	PKMNCCO	O	130	10000	1300000	5200000
2.3	Q	PKPNC	PKMNCDO	O	163	200000	32600000	130400000
2.3	Q	PKPNC	PKMNCEO	O	70	180000	12600000	50400000
2.3	Q	PKPNI	PKINFSO	I	70	159874	11191180	44764720
2.3	Q	PKPNI	PKINIAO	O	70	159874	11191180	44764720
2.3	Q	PKPNQ	PKINMSO	I	70	159874	11191180	44764720
2.3	Q	PKPNQ	PKIKFSO	I	110	250000	27500000	110000000
2.3	Q	PKPNQ	PKIABAR	I	80	1	80	320
2.3	Q	PKPNQ	PKMNQAO	O	110	286008	31460880	125843520
2.3	Q	PKPLJ	PKIKGSO	I	100	48933	4893300	19573200
2.3	Q	PKPLJ	PKIKT20	I	150	7104	1065600	4262400
2.3	Q	PKPLJ	PKMBMSO	I	80	3000	240000	960000
2.3	Q	PKPLJ	PKIABAR	I	80	1	80	320
2.3	Q	PKPLJ	PKMLJ10	O	270	3000	810000	3240000
2.3	Q	PKPLJ	PKMLJ20	O	220	51000	11220000	44880000
2.3	Q	PKPLJ	PKMLJ30	O	300	60000	18000000	72000000
2.3	Q	PKPLQ	PKIINSO	I	70	9418	659260	2637040
2.3	Q	PKPLQ	PKIIN10	I	50	100	5000	20000
2.3	Q	PKPLQ	PKILPSO	I	50	90	4500	18000
2.3	Q	PKPLQ	PKILDSO	I	130	50	6500	26000
2.3	Q	PKPLQ	PKMBMSO	I	80	3000	240000	960000
2.3	Q	PKPLQ	PKIABAR	I	80	1	80	320
2.3	Q	PKPLQ	PKMLQ10	O	240	300	72000	288000
2.3	Q	PKPLQ	PKMLQ20	O	120	10000	1200000	4800000
2.3	Q	PKPLN	PKILCSO	I	40	8000	320000	1280000
2.3	Q	PKPLN	PKIL610	I	80	2000	160000	640000
2.3	Q	PKPLN	PKIHP20	I	110	6255	688050	2752200
2.3	Q	PKPLN	PKIIASO	I	20	150	3000	12000
2.3	Q	PKPLN	PKIHTSO	I	110	6255	688050	2752200
2.3	Q	PKPLN	PKMBMSO	I	80	3000	240000	960000
2.3	Q	PKPLN	PKILESO	I	60	80000	4800000	19200000
2.3	Q	PKPLN	PKMHNAO	I	50	75000	3750000	15000000
2.3	Q	PKPLN	PKMDTAO	I	280	300000	84000000	336000000
2.3	Q	PKPLN	PKMLN10	O	340	400000	136000000	544000000
2.3	Q	PKPLN	PKMLN20	O	180	1000	180000	720000
2.3	Q	PKPHN	PKIHLSO	I	60	79326	4759560	19038240
2.3	Q	PKPHN	PKIABAR	I	80	1	80	320
2.3	Q	PKPHN	PKMHNAO	O	50	75000	3750000	15000000
2.3	M	PKPDT	PKIDRSO	I	320	16634	5322880	63874560
2.3	M	PKPDT	PKMDTAO	I	280	300000	84000000	1008000000
2.3	M	PKPDT	PKMDVBO	I	280	300000	84000000	1008000000

FUNC #	F Q	PROGRAM ID	FILE ID	I/O	REC SIZE	RECORD VOLUME	PERIOD TOTAL	ANNUALIZED TOTAL
* FUNCTIONAL DESCRIPTION ---> UPDATE COST & MAINTENANCE DATA								
2.3	M	PKPDT	PKMDUCO	I	280	300000	84000000	1008000000
2.3	M	PKPDT	PKMDTAO	O	280	300000	84000000	1008000000
2.3	M	PKPDT	PKMDVBO	O	280	300000	84000000	1008000000
2.3	M	PKPDT	PKMDUCO	O	280	300000	84000000	1008000000
2.3	M	PKPDT	PKIBRAO	O	140	22863	3200820	38409840
2.3	M	PKPDT	PKIDHBO	O	80	6000	480000	5760000
2.3	M	PKPCM	PKMDVBO	I	280	300000	84000000	1008000000
2.3	M	PKPCM	PKICJSO	I	350	2960	1036000	12432000
2.3	M	PKPCM	PKICHSO	I	180	100	18000	216000
2.3	M	PKPCM	PKICMAO	O	350	2960	1036000	12432000
2.3	M	PKPCM	PKIBRAO	O	140	22863	3200820	38409840
** SUBTOTAL **								10620395680
* FUNCTIONAL DESCRIPTION ---> PROVIDE STANDARD OUTPUT PRODUCTS								
3.0	AR	VARIOUS			0	0	0	0
** SUBTOTAL **								0
* FUNCTIONAL DESCRIPTION ---> PROCESS DEMANDS								
3.1	AR	PKPQC	PKIQAAO	I	80	25	2000	2000
3.1	AR	PKPQC	PKIQCDO	I	140	500	70000	70000
3.1	AR	PKPQC	PKMBMSO	I	80	3000	240000	240000
3.1	AR	PKPQC	PKIABAR	I	80	1	80	80
3.1	AR	PKPQC	PKIQCAO	O	80	25	2000	2000
3.1	AR	PKPQC	PKIQCBO	O	140	500	70000	70000
3.1	AR	PKPQC	PKIQCCO	O	140	100	14000	14000
3.1	AR	PKPQC	PKIQCDO	O	140	500	70000	70000
3.1	AR	PKPQC	PKIQCEO	O	140	500	70000	70000
3.1	AR	PKPQC	PKIQCFO	O	80	500	40000	40000
3.1	AR	PKPQC	PKIQCGO	O	140	500	70000	70000
3.1	AR	PKPQF	PKIQCAO	I	80	25	2000	2000
3.1	AR	PKPQF	PKIQFAO	O	80	25	2000	2000
3.1	AR	PKPQF	PKIQFBO	O	80	25	2000	2000
3.1	AR	PKPQF	PKIQFCO	O	80	20	1600	1600
** SUBTOTAL **								655680

FUNC #	F Q	PROGRAM ID	FILE ID	I/O	REC SIZE	RECORD VOLUME	PERIOD TOTAL	ANNUALIZED TOTAL
* FUNCTIONAL DESCRIPTION ---> PRODUCE OUTPUT REPORTS PRINT TAPE								
3.2	AR	PKPQI	PKIQFAO	I	80	25	2000	2000
3.2	AR	PKPQI	PKMNDAO	I	1300	175000	227500000	227500000
3.2	AR	PKPQI	PKIABAR	I	80	1	80	80
3.2	AR	PKPQI	PKIQIBO	O	1300	0	0	0
3.2	AR	PKPQI	PKIQIAO	O	310	0	0	0
3.2	AR	PKPQI	PKIQCCO	O	140	100	14000	14000
3.2	AR	PKPQW	PKIQQSO	I	1300	0	0	0
3.2	AR	PKPQW	PKMBMSO	I	80	3000	240000	240000
3.2	AR	PKPQW	PKIABAR	I	80	1	80	80
3.2	AR	PKPQW	PKIQWAO	O	160	18	2880	2880
3.2	AR	PKPQY	PKIQFAO	I	80	25	2000	2000
3.2	AR	PKPQY	PKMNCAO	I	280	400000	112000000	112000000
3.2	AR	PKPQY	PKIABAR	I	80	1	80	80
3.2	AR	PKPQY	PKIQYBO	O	300	2	600	600
3.2	AR	PKPQY	PKIQYAO	O	300	2	600	600
3.2	AR	PKPQY	PKIQCCO	O	140	100	14000	14000
3.2	AR	PKPRF	PKIRCSO	I	300	2	600	600
3.2	AR	PKPRF	PKMBMSO	I	80	3000	240000	240000
3.2	AR	PKPRF	PKIABAR	I	80	1	80	80
3.2	AR	PKPRF	PKIRFAO	O	132	8	1056	1056
3.2	AR	PKPRI	PKIQFAO	I	80	25	2000	2000
3.2	AR	PKPRI	PKMNCBO	I	280	200000	56000000	56000000
3.2	AR	PKPRI	PKIABAR	I	80	1	80	80
3.2	AR	PKPRI	PKIRIBO	O	300	2	600	600
3.2	AR	PKPRI	PKIRIAO	O	300	2	600	600
3.2	AR	PKPRI	PKIRICO	O	120	0	0	0
3.2	AR	PKPRT	PKIRQSO	I	300	2	600	600
3.2	AR	PKPRT	PKMBMSO	I	80	3000	240000	240000
3.2	AR	PKPRT	PKIABAR	I	80	1	80	80
3.2	AR	PKPRT	PKIRTAO	O	132	8	1056	1056
3.2	AR	PKPTW	PKIQFAO	I	80	25	2000	2000
3.2	AR	PKPTW	PKMLN20	I	180	1000	180000	180000
3.2	AR	PKPTW	PKMLQ10	I	240	300	72000	72000
3.2	AR	PKPTW	PKMBMSO	I	80	3000	240000	240000
3.2	AR	PKPTW	PKIABAR	I	80	1	80	80
3.2	AR	PKPTW	PKITWAO	O	160	9	1440	1440
3.2	AR	PKPTX	PKIQMSO	I	310	0	0	0
3.2	AR	PKPTX	PKIRASO	I	300	2	600	600
3.2	AR	PKPTX	PKIRMSO	I	300	2	600	600
3.2	AR	PKPTX	PKIRYSO	I	140	2	280	280
3.2	AR	PKPTX	PKISRSO	I	180	2	360	360

FUNC #	F G	PROGRAM ID	FILE ID	I/O	REC SIZE	RECORD VOLUME	PERIOD TOTAL	ANNUALIZED TOTAL
* FUNCTIONAL DESCRIPTION ---> PRODUCE OUTPUT REPORTS PRINT TAPE								
3.2	AR	PKPTX	PKISKSO	I	0	0	0	0
3.2	AR	PKPTX	PKISYSO	I	170	25	4250	4250
3.2	AR	PKPTX	PKITESO	I	0	0	0	0
3.2	AR	PKPTX	PKITQSO	I	230	2	460	460
3.2	AR	PKPTX	PKIQFAO	I	80	25	2000	2000
3.2	AR	PKPTX	PKITISO	I	130	25	3250	3250
3.2	AR	PKPTX	PKITXAO	O	140	100	14000	14000
3.2	M	PKPDZ	PKIDXAO	I	140	1000	140000	1680000
3.2	M	PKPDZ	LMOMOMDZ	O	0	0	0	0
3.2	AR	PKPRW	PKIQFAO	I	80	25	2000	2000
3.2	AR	PKPRW	PKMNCCO	I	130	10000	1300000	1300000
3.2	AR	PKPRW	PKIABAR	I	80	1	80	80
3.2	AR	PKPRW	PKIRWBO	O	140	2	280	280
3.2	AR	PKPRW	PKIRWAO	O	140	2	280	280
3.2	AR	PKPRW	PKIQCCO	O	140	100	14000	14000
3.2	AR	PKPSC	PKISASO	I	140	2	280	280
3.2	AR	PKPSC	PKMBMSO	I	80	3000	240000	240000
3.2	AR	PKPSC	PKIABAR	I	80	1	80	80
3.2	AR	PKPSC	PKISCAO	O	160	4	640	640
3.2	AR	PKPSI	PKIQFAO	I	80	25	2000	2000
3.2	AR	PKPSI	PKMNCDO	I	163	200000	32600000	32600000
3.2	AR	PKPSI	PKMDTAO	I	280	300000	84000000	84000000
3.2	AR	PKPSI	PKIABAR	I	80	1	80	80
3.2	AR	PKPSI	PKISIBO	O	190	2	380	380
3.2	AR	PKPSI	PKISIAO	O	190	25	4750	4750
3.2	AR	PKPSI	PKISICO	O	180	2	360	360
3.2	AR	PKPSI	PKISIDO	O	180	2	360	360
3.2	AR	PKPSI	PKIQCCO	O	140	100	14000	14000
3.2	AR	PKPSV	PKISTSO	I	180	2	360	360
3.2	AR	PKPSV	PKMBMSO	I	80	3000	240000	240000
3.2	AR	PKPSV	PKIABAR	I	80	1	80	80
3.2	AR	PKPSV	PKISVAO	O	132	14	1848	1848
3.2	AR	PKPSW	PKIQFAO	I	80	25	2000	2000
3.2	AR	PKPSW	PKMDUCO	I	280	300000	84000000	84000000
3.2	AR	PKPSW	PKIABAR	I	80	1	80	80
3.2	AR	PKPSW	PKISWBO	O	170	0	0	0
3.2	AR	PKPSW	PKISWAO	O	170	25	4250	4250
3.2	AR	PKPSW	PKIQCCO	O	140	100	14000	14000
3.2	AR	PKPTC	PKITASO	I	170	0	0	0
3.2	AR	PKPTC	PKMBMSO	I	80	3000	240000	240000
3.2	AR	PKPTC	PKIABAR	I	80	1	80	80

FUNC #	F Q	PROGRAM ID	FILE ID	I/O	REC SIZE	RECORD VOLUME	PERIOD TOTAL	ANNUALIZED TOTAL
* FUNCTIONAL DESCRIPTION ---> PRODUCE OUTPUT REPORTS PRINT TAPE								
3.2	AR	PKPTC	PKITCAO	O	132	3	396	396
3.2	Q	PKPNI	PKINFSO	I	70	159874	11191180	44764720
3.2	Q	PKPNI	PKINIAO	O	70	159874	11191180	44764720
3.2	Q	PKPNK	PKINJSO	I	70	159874	11191180	44764720
3.2	Q	PKPNK	PKMBMSO	I	80	3000	240000	960000
3.2	Q	PKPNK	PKIABAR	I	80	1	80	320
3.2	Q	PKPNK	PKINKAO	O	140	10491	1468740	5874960
3.2	Q	PKPNK	PKINKAO	O	140	10491	1468740	5874960
3.2	AR	PKPTD	PKIQFAO	I	80	25	2000	2000
3.2	AR	PKPTD	PKMDTAO	I	280	300000	84000000	84000000
3.2	AR	PKPTD	PKMBMSO	I	80	3000	240000	240000
3.2	AR	PKPTD	PKITDBO	O	141	0	0	0
3.2	AR	PKPTD	PKITDAO	O	141	25	3525	3525
3.2	AR	PKPTD	PKIQCCO	O	140	100	14000	14000
3.2	AR	PKPT6	PKITFSO	I	141	0	0	0
3.2	AR	PKPT6	PKMBMSO	I	80	3000	240000	240000
3.2	AR	PKPT6	PKIABAR	I	80	1	80	80
3.2	AR	PKPT6	PKITGAO	O	132	0	0	0
3.2	AR	PKPTH	PKMNTSO	I	110	300000	33000000	33000000
3.2	AR	PKPTH	PKIQFAO	I	80	25	2000	2000
3.2	AR	PKPTH	PKIABAR	I	80	1	80	80
3.2	AR	PKPTH	PKITHBO	O	130	25	3250	3250
3.2	AR	PKPTH	PKITHAO	O	130	25	3250	3250
3.2	AR	PKPTH	PKIQCCO	O	140	100	14000	14000
3.2	AR	PKPTL	PKITJSO	I	130	25	3250	3250
3.2	AR	PKPTL	PKMBMSO	I	80	3000	240000	240000
3.2	AR	PKPTL	PKIABAR	I	80	1	80	80
3.2	AR	PKPTL	PKITLAO	O	160	2	320	320
3.2	AR	PKPTM	PKIQFAO	I	80	25	2000	2000
3.2	AR	PKPTM	PKMLJ20	I	220	51000	11220000	11220000
3.2	AR	PKPTM	PKMNCBO	I	280	200000	56000000	56000000
3.2	AR	PKPTM	PKMDUCO	I	280	300000	84000000	84000000
3.2	AR	PKPTM	PKIABAR	I	80	1	80	80
3.2	AR	PKPTM	PKITMBO	O	230	2	460	460
3.2	AR	PKPTM	PKITMAO	O	230	2	460	460
3.2	AR	PKPTM	PKIQCCO	O	140	100	14000	14000
3.2	AR	PKPTU	PKITSSO	I	0	0	0	0
3.2	AR	PKPTU	PKMBMSO	I	80	3000	240000	240000
3.2	AR	PKPTU	PKIABAR	I	80	1	80	80
3.2	AR	PKPTU	PKITUAO	O	132	9	1188	1188
3.2	AR	PKPSP	PKISMSO	I	0	0	0	0

FUNC #	F Q	PROGRAM ID	FILE ID	I/O	REC SIZE	RECORD VOLUME	PERIOD TOTAL	ANNUALIZED TOTAL
* FUNCTIONAL DESCRIPTION ---> PRODUCE OUTPUT REPORTS PRINT TAPE								
3.2	AR	PKPSP	PKMBMSO	I	80	3000	240000	240000
3.2	AR	PKPSP	PKIABAR	I	80	1	80	80
3.2	AR	PKPSP	PKISPAO	O	160	5	800	800
** SUBTOTAL **								1017636439
* FUNCTIONAL DESCRIPTION ---> PROVIDE DATA BASE ACCESS								
4.0	AR	VARIOUS			0	0	0	0
** SUBTOTAL **								0
* FUNCTIONAL DESCRIPTION ---> PROCESS DEMANDS								
4.1	AR	PKPQC	PKIQAAO	I	80	25	2000	2000
4.1	AR	PKPQC	PKIQCDO	I	80	500	40000	40000
4.1	AR	PKPQC	PKMBMSO	I	80	3000	240000	240000
4.1	AR	PKPQC	PKIABAR	I	80	1	80	80
4.1	AR	PKPQC	PKIQCAO	O	80	25	2000	2000
4.1	AR	PKPQC	PKIQCBO	O	80	500	40000	40000
4.1	AR	PKPQC	PKIQCCO	O	140	100	14000	14000
4.1	AR	PKPQC	PKIQCDO	O	80	500	40000	40000
4.1	AR	PKPQC	PKIQCEO	O	80	500	40000	40000
4.1	AR	PKPQC	PKIQCFO	O	80	500	40000	40000
4.1	AR	PKPQC	PKIQCGO	O	80	500	40000	40000
** SUBTOTAL **								498080
* FUNCTIONAL DESCRIPTION ---> SELECT DATA BASE								
4.2	AR	PKPUC	PKIQFBO	I	80	25	2000	2000
4.2	AR	PKPUC	PKIUCAO	O	90	25	2250	2250
4.2	AR	PKPUC	PKIUCBO	O	90	25	2250	2250
4.2	AR	PKPUC	PKIUCCO	O	90	25	2250	2250
4.2	AR	PKPUC	PKIUCDO	O	90	25	2250	2250
4.2	AR	PKPUC	PKIUCEO	O	90	25	2250	2250
4.2	AR	PKPUC	PKIUCFO	O	90	25	2250	2250
4.2	AR	PKPUF	PKIUCAO	I	90	25	2250	2250
4.2	AR	PKPUF	PKMHNAO	I	50	75000	3750000	3750000
4.2	AR	PKPUF	PKMLN20	I	180	1000	180000	180000
4.2	AR	PKPUF	PKIABAR	I	80	1	80	80

FUNC #	F G	PROGRAM ID	FILE ID	I/O	REC SIZE	RECORD VOLUME	PERIOD TOTAL	ANNUALIZED TOTAL
* FUNCTIONAL DESCRIPTION ---> SELECT DATA BASE								
4.2	AR	PKPUF	PKIUFAO	O	220	25	5500	5500
4.2	AR	PKPUM	PKIUCBO	I	90	25	2250	2250
4.2	AR	PKPUM	PKMLQ10	I	240	300	72000	72000
4.2	AR	PKPUM	PKIABAR	I	80	1	80	80
4.2	AR	PKPUM	PKIUMAO	O	260	25	6500	6500
4.2	AR	PKPUT	PKIUCCO	I	90	25	2250	2250
4.2	AR	PKPUT	PKMLN10	I	340	400000	136000000	136000000
4.2	AR	PKPUT	PKIABAR	I	80	1	80	80
4.2	AR	PKPUT	PKIUTAO	O	360	25	9000	9000
4.2	AR	PKPUY	PKIUCDO	I	90	25	2250	2250
4.2	AR	PKPUY	PKMLQ20	I	120	10000	1200000	1200000
4.2	AR	PKPUY	PKIABAR	I	80	1	80	80
4.2	AR	PKPUY	PKIUYAO	O	140	25	3500	3500
4.2	AR	PKPVF	PKIUCEO	I	90	25	2250	2250
4.2	AR	PKPVF	PKILMSO	I	300	100000	30000000	30000000
4.2	AR	PKPVF	PKIABAR	I	80	1	80	80
4.2	AR	PKPVF	PKIVFAO	O	320	25	8000	8000
4.2	AR	PKPVL	PKIUCFO	I	90	25	2250	2250
4.2	AR	PKPVL	PKMLJ10	I	270	3000	810000	810000
4.2	AR	PKPVL	PKIABAR	I	80	1	80	80
4.2	AR	PKPVL	PKIVLAO	O	290	25	7250	7250
** SUBTOTAL **								172081230
* FUNCTIONAL DESCRIPTION ---> PRODUCE TAPE EXTRACTS								
4.3	AR	PKPVY	PKIUISO	I	220	25	5500	5500
4.3	AR	PKPVY	PKIUQSO	I	260	25	6500	6500
4.3	AR	PKPVY	PKIUWAO	I	360	25	9000	9000
4.3	AR	PKPVY	PKIVCSO	I	140	25	3500	3500
4.3	AR	PKPVY	PKIVISO	I	320	25	8000	8000
4.3	AR	PKPVY	PKIVQSO	I	290	25	7250	7250
4.3	AR	PKPVY	PKIQFBO	I	80	25	2000	2000
4.3	AR	PKPVY	PKIVYAO	O	140	5000	700000	700000
** SUBTOTAL **								741750
** TOTAL **								41619145970

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) VAMOSC ADPE Support Considerations -Final Report		5. TYPE OF REPORT & PERIOD COVERED Technical Report 6. PERFORMING ORG. REPORT NUMBER 2900-11-2-3389
7. AUTHOR(s) Roger L. Nasteff Wallace Miller Sally Tarquinio		8. CONTRACT OR GRANT NUMBER(s) F41608-82-D-A012-0005
9. PERFORMING ORGANIZATION NAME AND ADDRESS ARINC Research Corporation 2551 Riva Road Annapolis, MD 21401		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
11. CONTROLLING OFFICE NAME AND ADDRESS HQ AFLC/MML(VAMOSC) Wright-Patterson AFB, OH 45433		12. REPORT DATE September 1984 13. NUMBER OF PAGES 106
14. MONITORING AGENCY NAME & ADDRESS(if different from Controlling Office)		15. SECURITY CLASS. (of this report) Unclassified 15a. DECLASSIFICATION/DOWNGRADING SCHEDULE

16. DISTRIBUTION STATEMENT (of this Report)

This material may be reproduced by or for the U.S. Government pursuant to the copyright license under DAR Clause 7-104.9(a) (May 1981).

17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)

18. SUPPLEMENTARY NOTES

19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

VAMOSC

O & S Costs

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

This final report presents the results of the Visibility and Management of Operating and Support Costs (VAMOSC) Automatic Data Processing Equipment (ADPE) Support Study. The project was undertaken at the request of the HQ AFLC/MML(VAMOSC) Program Office and spanned 12 calendar months from October 1983 through September 1984. Most of the work was performed at ARINC Research Corporation headquarters in Annapolis, Maryland, with occasional trips for data gathering and project status

DD FORM 1 JAN 73 1473 EDITION OF 1 NOV 65 IS OBSOLETE

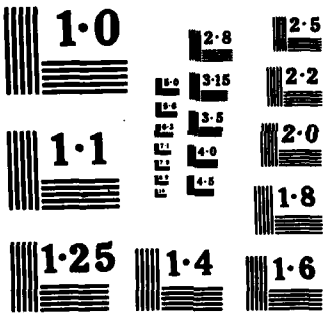
Unclassified

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

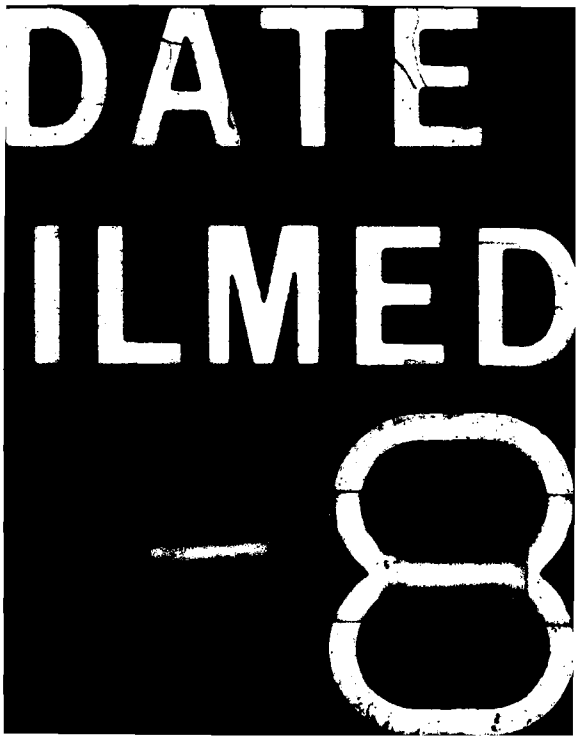
AD-A156 915 VAMOSC (VISIBILITY AND MANAGEMENT OF OPERATING AND SUPPORT COSTS) ADPE SUPPORT CONSIDERATIONS(U) ARINC RESEARCH CORP ANNAPOLIS MD R L NASTEFF ET AL. SEP 84 2900-11-2-3389 F41808-82-D-A012 F/G 5/1 NL

2/2

UNCLASSIFIED


1·0
1·1
1·25
2·8
3·15
3·5
4·0
4·5
1·4
2·5
2·2
2·0
1·8
1·6

20. briefings. Software system engineering technologies used during this study included face-to-face user requirements survey, requirements analysis, functional analysis, interface analysis, computer facility modeling, and data system sizing.


DATE
ILMED
-8